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The Society is not responsible, as a body, for the facts and opinions advanced in the papers published by it.

EAST MEETS WEST

EDITORIAL

"The frontiers are not east or west, north or south,
but wherever a man fronts a fact."—*Thoreau*

The twenty-seventh annual meeting of the Society in San Francisco marks a new milestone in the growth of our Society. It was the first official annual meeting held on the Pacific Coast. It brought out an attendance of some 255 people—an attendance never reached at any Eastern meeting. A few years ago even the extreme optimist would not have dared to predict the possibility of such a meeting on the Pacific Coast. It is a testimony to the growth of the Society in the West, both in numbers and influence. It is clear that from now on the general meetings can be held and large attendance assured either in the East or the West.

The program committee had an admirable conception of the scope of the meeting—to bring out the significance of the Pacific Coast forests not only in the economic life of the United States, but also to the economic growth of the countries lying around the Pacific Ocean. An ambitious program! If it fell below its mark, it is not the fault of the program committee. Several speakers, notably President Wilbur of Stanford University, did treat the subject with clearness and vision. The majority, however, conceived the Western forest problem too narrowly, largely as a local problem without connecting it with the developments in the eastern United States or the Orient.

The discussion that followed the papers showed again and again the sharp contrast between the Eastern and Western points of view. The greatest value of this meeting was in smoothing out this difference of opinion. No other occasion could have brought out so clearly the dependence of the West on the East and of the East on the West in obtaining a balanced picture of our forest situation.

Our Western friends, overwhelmed by the immensity of their timber resources, tremendous engineering problems in harvesting them, are so oppressed by the magnitude of the task that the majority of them cannot see far beyond their own, undoubtedly large, problems. For the same reason the tone of the papers has been marked by a certain fatalism and pessimism, too much willingness to yield to what seemed the irresistible economic trends, mechanical difficulties of logging, and the financial aspects of the industry. At the present economic stage of the development of the lumber industry, when overproduction on the Pacific Coast is the pivotal problem affecting the United States, one naturally looked to the West for some suggestions of meeting this problem. Like a person too close to a big mountain cannot see its entire outline and its relation to the rest of the landscape, so the Western foresters need distance and perspective to view their own situation in proper balance to the rest of the country.

One could not escape, also, the impression that even the silviculture of the Pacific Coast is dominated by the mechanical difficulties of logging. Not what is best for the good of the forest, but rather adjusting silviculture to the present logging operations. No heretics arose among the Western crowd, except possibly Show, even to question the possibility of changing the present logging methods for the sake of perpetuating the old stands.

It is unfortunate that the distance prevented a larger attendance of Eastern foresters and the few, who were present, were not thoroughly familiar with the local conditions to meet the Western point of view on its own ground.

Yet it was a wonderful meeting in many ways. The spirit of comradeship, the good humor, the willingness to take and give in an argument, all bore witness to that atmosphere of intellectual honesty, sincerity, and genuineness which generally permeates the gatherings of foresters. It emphasized the vastness of our country with the great divergence of forest problems and the great need of more frequent gatherings to discuss problems affecting the whole country, to rub elbows against each other, and put new courage and faith into each other's hearts.

Let us hope that not in the far future another general meeting of the Society may be held in the West, that there may be a greater representation from the other regions, and that there may be a more vigorous discussion of each other's problems as they affect the common good of the entire country.

WHERE WE ARE GOING*

By R. Y. STUART

Retiring President, Society of American Foresters

Nineteen Twenty-Seven (1927) has been a year of introspection in forestry. It has witnessed an awakened realization by private owners of the stewardship attached to forest land ownership and the announced purpose of their leaders to accept this responsibility to the extent to which it is economically permissive. It has witnessed a survey of the extent of sound forest practice on private lands and of the substantiality of its progress. It has witnessed a critical examination by foresters of their concept of forestry and of their ability individually and as a profession to measure up to its requirements. Foresters and forest owners alike are taking the measure of their problems and responsibilities in relation to the country's present and future forest needs. This, our first Annual Meeting in the West, fittingly symbolizes the intent of western and eastern foresters to join more closely together in professional interest and purpose. The time is auspicious for a marked advance in sound forest practice.

INDUSTRIAL FORESTRY

I shall not attempt to discuss the present situation and tendencies in industrial forestry. This meeting is being devoted largely to discussions of the subject by others whose experience is in that field. The Society Committee on Industrial Forestry, under the chairmanship of Shirley Allen, has devoted considerable time to the collection of data and has submitted its report at this meeting. Those of you who were unable to attend the Chicago conference on Industrial Forestry will desire to read the record of that conference. It is significant that forest land owners in seeking a more substantial basis than immediate returns for continuing their investments in forest land are familiarizing themselves with the principles and benefits of forestry.

* Annual Meeting, Society of American Foresters, San Francisco, Calif., December 16-17, 1927.

It is being more and more realized that forestry, in its essence, is the common sense application of a knowledge of forest production, care and use to the sustained needs of the individual and public, and that the possibilities of forestry are more nearly attained when service to the general public is the dominating motive. It is not enough, therefore, to have forester and forest land owner engage themselves in meeting the situation. There must be active public interest and support to give effect to their efforts, and to have our forest lands, public and private, yield their highest benefits. The Society should give the full weight of its influence and direct help to the industrial forestry movement.

FOREST EDUCATION

The ability of the profession to serve the public depends very largely upon the caliber of the men in it. The profession is, therefore, zealous of its members and their qualifications to perform creditable service. It gives its allegiance to the forest schools from which its members come and shares with the schools responsibility in having suitable young men adequately trained for professional service.

It is well to recognize that forest schools in this country, in common with the profession, have been established for but a short time. The rapid development of the profession has meant the creation of educational needs which are difficult to satisfy promptly. Experienced personnel, adequate funds and appropriate adjustment of curriculum to professional requirements, present and prospective, are not readily attained in a young profession. The profession must sympathetically and constructively assist forest educators in meeting the problem.

Fortunately, through the interest of the National Academy of Sciences and the active participation of Dean H. S. Graves, a study was begun by the Academy in 1925 which promises immeasurable benefits to forest education. Dean Graves has recently submitted a preliminary report on a study of forest schools in America and abroad made by him under these auspices and has recommended its continuance on a more intensive basis. Upon invitation from the Forestry Committee of the Academy, the Society is co-operating with Dean Graves in the development of plans for a continuation of the study. The President has appointed a special committee for the purpose, consisting of Messrs. Clapp, Dana, Hosmer, B. Moore, Shepard and D. Mason. While continuation of the project is not as yet assured the Society's best efforts will be directed toward its realization.

FOREST RESEARCH

The members of the Society are familiar with the comprehensive report on National Forest Research prepared by a Committee of the Washington Section under the leadership of E. H. Clapp. The Committee's recommendations and conclusions, endorsed by the Society, were incorporated by the National Forestry Program Committee into a bill later introduced by Congressman McSweeney of Ohio in the last session of Congress as H.R. 17406 and known as the McSweeney Bill. The bill has been reintroduced, with minor amendments, in the present session of Congress by Congressman McSweeney and Senator McNary as H.R. 6091 and S. 1183.

It is unnecessary for me to cite the details and significance of this measure, to which all foresters can subscribe. It will suffice to say that it provides authorization for a comprehensive plan of national forest research, participated in by national, state and private agencies to the end that by independent, co-operative and co-ordinated efforts these agencies may more adequately meet, through research, the pressing problems in forestry.

Another valuable contribution to forest research during the year has been the report by I. W. Bailey and H. A. Spoehr on "Forest Research" prepared under the auspices of the Forestry Committee of the National Academy of Sciences. Incident to the submission of the Bailey and Spoehr report and the Graves report previously referred to, the Academy Committee has requested the co-operation of the Society in the preparation and submission of a joint report to the Academy on the need for fellowships in forest research. The President has requested the Special Committee on Forest Education, mentioned above, to represent the Society in this project.

Mention should also be made, in their bearing upon developments and progress in forest research, of the International Soils Congress held in Washington, D.C., June 13-22, of the visit to the United States this summer of Professor H. Hesselman, of Sweden, under a co-operative arrangement between the International Education Board and the Society, and the establishment of a chair of Soils by Mr. Chas. Lathrop Pack at Cornell University.

MISSISSIPPI FLOOD CONTROL

In view of the comprehensive survey of the Mississippi flood situation undertaken by the U. S. Forest Service in co-operation with the

State Forest officials and other agencies, and the extent to which members of the Society participated in the survey, the Society did not make an independent survey. Through the courtesy of the Forest Service the Executive Council had the privilege of reviewing the Forest Service report. After consideration of the report the Council voted to approve the general conclusions reached in it. It was also voted by the Council to approve the recommendations made with the understanding that further consideration might indicate desirable modifications in the exact appropriations proposed for various purposes. At the direction of Council the President requested an early publication of the Forest Service report. In a communication from the Forester just received it is stated that the report is being mimeographed for immediate use and that he hopes opportunity will be open for its later publication.

SOCIETY AFFAIRS

The rapid growth of forestry and the profession is measuring the strength of the Society and its fitness to function effectively in an enlarged sphere of service and influence. Our membership is growing steadily; our professional interests are becoming more diversified; and we are seeking a greater understanding of the functioning of the Society and our relationship to it. Recognizing the pressing need to have the Society so organized and functioning as to meet its responsibility to the profession and to its individual members, your officers and the Executive Council have given special attention during the year, to internal Society affairs.

The Society has had published in the JOURNAL a revision of the constitution as recommended by the Committee on the Revision of the Constitution, of which E. H. Frothingham is chairman, and has issued a special appeal to sections and members to scrutinize this proposed revision closely and submit suggestions for its improvement. It was felt that in this way full and frank expression from the membership could be had on the form of Society organization which will most effectively meet the situation. The Committee on the Revision of the Constitution and the Executive Council will give careful consideration to all suggestions received, before submitting a revised constitution to the members for action.

In order that better contact might be had between the parent Society and its sections and that constructive suggestions might be had

for the improvement of the Society from all quarters, the President met with eleven of the fifteen sections of the Society during the year. In these meetings, discussion was directed primarily to Society affairs and in every case interest in the Society was manifested by a spirited discussion of our aims, purposes, organization, functioning and responsibilities. During the year many letters were interchanged on this subject with section officers and members. More emphasis and space has been given in the JOURNAL OF FORESTRY to Society affairs, under the direction of Shirley Allen, a portion of each issue being devoted to it. A special committee consisting of J. H. Fahrenbach, B. A. Chandler, G. H. Collingwood and A. E. Fivaz made a study of the business system in the office of the American Association for the Advancement of Science, and adapted it to Society use. I think it can be safely said that there has been more general thought and discussion given to these questions in 1927 than for many years.

The result of this effort to arouse more intense interest in Society affairs has been most gratifying. More active interest has been shown; there is a keener desire to make the Society more effective; there is a better understanding of its needs; there is a greater realization of the fact that the strength of the Society rests in the strength of its sections; and there is a closer bond developing between sections. While this progress in our development is evidenced in many ways, there should be mentioned specifically, the action of the New York section in raising its annual dues from \$2 to \$10, the additional amount being pledged to the Society toward the employment of a full-time secretary; the action of the Washington section of increasing its annual dues from \$2 to \$5 for the same purpose; and the receipt of voluntary contributions from members in excess of dues, amounting to \$825. Nor should we overlook the significance of this Western meeting as indicating the scope of our interest and our desire to knit ourselves more closely together professionally.

It is becoming increasingly evident, however, that the Society as now organized is not functioning effectively. It is depending too largely upon the contributed time of its officers to transact its routine business, which is growing steadily and, under the existing conditions, cannot be handled creditably to either the Society or to them. It is attempting to meet the needs of 1,300 widely scattered members on the same financial plane as when it comprised but several hundred

members, practically all of whom were in Government service. It withholds the financial support necessary to permit its officers to serve it with reasonable expectations of fulfilling their obligations.

For several years the Executive Council has reported the financial weakness of the Society and explicitly stated that the actual functioning of the Society under policies already approved requires more funds. The recommendation of the Council for increased dues to this end has twice been defeated by letter ballot. It seems now clear, however, that the adverse vote on increased dues was attributable largely to a misunderstanding of the Council's basis for the recommendation and to the substantial increases proposed.

In presenting to the Society the need for increased dues, the Council stated the desirability of employing a competent executive, of technical training and experience, to give his entire time to Society affairs in order to assure the effective conduct of the work and program to which it is already committed, and to undertake further lines of activity in response to the demand already existent. In thus recommending the financing and employment of an executive secretary, the Council had in mind the effective conduct of its own affairs and the type of assistance needed by your officers to carry out creditably the duties which fall to them. To employ assistance of such competence would require the increase in dues recommended in 1926. Studies made by O. M. Butler and S. B. Detwiler during the year of the organization and functioning of other national professional societies indicated plainly the effectiveness of this type of organization and the conservative provision made by the Council for it.

While the Council is still of the opinion that the Society needs, and should have, a full-time executive secretary, working under the direction of the officers and Council, it realizes that its insistence on this point may further delay provision for funds absolutely needed for purely clerical and stenographic help. It therefore decided at its Chicago meeting on November 15 to resubmit to the members the question of increased dues in lesser amount, viz.: Annual dues of \$6 for members and \$8 for senior members. I cannot urge too strongly that you not only vote favorably on this recommendation when the ballot reaches you, but that you use your influence among the members of your section in the interim in having them act favorably upon it.

The JOURNAL OF FORESTRY continues to be the outstanding achievement of the Society. It reflects the thought of the profession

to foresters at home and abroad. Under Raphael Zon's leadership it aims to maintain a high standard of professional thought and to inspire greater professional achievement. Its measure of service will be what the interest and contributions of the profession make it. There should be no thought of curtailing it. On the other hand, it should be given more support by the Society so that it may increase its power and influence not only throughout the profession but generally.

It must not be inferred from the Council's effort to obtain more funds for the conduct of the Society that it is departing from our policy of establishing and maintaining strong sections and counting upon them to reflect the true strength of the whole. Our strength lies in the activity, influence and accomplishments of our local groups and the co-ordination of their effort in matters of National and Society-wide interest. It is essential, however, that we be equipped and prepared to function effectively nationally, not alone for the economy that goes with centralized administrative routine, but to give correct, adequate and timely expression and action on matters of professional moment and concern. It is our reason for being.

With the growth of our sections, the scope of our territory and the diversity of our interests, it would be well to give early attention to a more representative form of government than is possible under our present Constitution. Action by the Society is now cumbersome and in practice not representative. Formal action, except as prescribed for the officers and Council by the Constitution, can be taken only by letter ballot. The Executive Council has in recent years found it necessary to form judgment and act for the Society in matters of immediate urgency and importance, time not permitting reference of them to the membership. While it has felt perfectly justified in this course, its action, in the absence of specific authority, may be open to question.

It may be well to consider whether the time is not here to have each section or each district (formed for the purpose) represented on the Council and to provide for formal action at our annual meetings by having the sections or districts represented there by accredited delegates, empowered to act for them. This plan would undoubtedly bind the interests of all parts of the country more closely together and permit more general participation in national Society affairs. It will entail, however, the will to provide the finances needed to properly carry out such a plan, although this item could be held to a reasonable

amount. We owe it to ourselves and the profession to adopt and finance the form of organization which will best give expression to our common aims and purposes.

We should recognize in our Society organization and relations the growing importance of private forestry and the increasing extent to which our members are participating in it. Our field of interest and influence should be all-inclusive. Our policy and record should spur each member to his responsibility to serve, and afford opportunity for him to do so. By the same token the Society should be prepared to render direct service to its members, not alone through its publication, but as the medium through which, when reasonable and proper, the conditions of employment of foresters may be improved and individual members be assisted in obtaining professional employment for which they are fitted.

Withal, our Society is founded on service; service to the public; service to the profession; service to our members. The measure of our service is the co-ordinated sum of individual and section contribution. And in our approach to more and better forest practice let us not forget that the substantiality of our worth as a Society will depend upon the degree to which we place public service first. Public service is traditional with the Society. Let us cherish that tradition as our guide to a promising future.

THE FOREST SCHOOL CONFERENCE*

BY FREDERICK S. BAKER

Associate Professor of Forestry

If the many points of view presented during the discussion at the Forest School Conference were to be taken literally, the answer to the question, "What is the matter with the forest schools?" could very readily be given—"They fail to produce paragons, men who can swing an axe or an abstruse research problem with equal facility." Unfortunately, however, such a literal summation of viewpoints fails to mean much of anything, and so, although State Forester Pratt of California plead for some means of getting a smattering of forestry into the local state ranger and the back-country fire fighters, who are the backbone of forestry on the ground, and Koehler of the Madison Laboratory, on the other hand, begged for more and better trained specialists who have had several years of graduate work, it is obvious that trying to roll the two extremes up together and getting something worth while is utterly impossible. While, therefore, a composite of all the views expressed fails to solve the problem of our forest schools, the discussion of the meeting served to bring up many important points and steps were approved which ought to lead to a real improvement in forestry education.

This educational conference called by the University of California to precede the annual meeting of the Society of American Foresters, turned out to be a big one, and at the same time discussion was very free and much to the point. Some 175 men attended the meetings which were held in Hilgard Hall at the University of California. Members of the present faculties of fourteen forest schools were represented in this group, while practically all the forest schools in the United States were represented by their alumni, the only forest schools missing on the roll call of alumni being those at New Hampshire, Georgia, and Louisiana. Five men were graduates of European forest schools. The entire day was spent in discussion.

First, in the morning several important plans that have been under way for some time bearing upon forest education were presented and briefly discussed—of which more later. Then followed a free general discussion of the whole field of forest education that took the rest of the morning and all the afternoon.

* Held at Berkeley on December 15, 1927.

As already intimated a vast number of different views were presented. It was clear that a large number of the largest employers of forest school graduates found them falling down on the job far too often, and many of the newer graduates testified that they went out into their jobs without knowing very well what they were to do or how to do it. Particularly striking were the concrete figures presented by District Forester A. S. Peck of the Rocky Mountain District, who showed that $16\frac{2}{3}$ per cent of the technically trained men placed in ranger positions had failed to make good, as against $8\frac{1}{3}$ per cent in the case of untrained men. On the other hand, 28 per cent of the untrained rangers are now considered for advancement as against 45 per cent of the trained men. School training does not necessarily fit a man for the ranger job, that is obvious, but the man who is fitted for the job temperamentally, and who is fundamentally sound, is placed in a much better place for advancement by virtue of his education. This point was reverted to repeatedly, and employers reiterated the fact that it was not necessarily the best technically trained man who suited them best, but the man with adaptability, a good cultural background, a certain amount of administrative ability, and a good fundamental training in forestry. Probably nobody would quarrel with such statements, but when it comes to defining the terms accurately, and still more, when it comes to stating how these desirable qualities are to be developed in the student, nobody had anything very concrete to offer. Nothing else was to be expected, perhaps, as it is just these things that are puzzling the entire educational world. Forest Supervisor G. H. Cecil offered the suggestion that it all simmered down to that much abused term "personality." If so, can "personality" be taught or developed in the schools? Most speakers seemed to doubt it, although Koehler felt that the mastery of research problems in school should develop the necessary mental self-confidence to lay the foundation of personality. Mr. W. R. Tanner, Assistant Director of Forestry in Los Angeles County, working in the Los Angeles Schools, felt that the value of honest patient plodding work could be taught and that such work would serve as a fair substitute for the elusive and more or less God-given personality. The forest school men attended this Conference in the rôle of listeners and accordingly expressed themselves but little regarding the points brought up. Rather reading between lines, we would say that they were skeptical about consistently turning out the ideal type regardless of curricula, professors, and every educational tool available. And so this particular line of thought came to an end.

A more concrete problem which was first brought up by Colonel Graves' paper, which we have not yet touched upon, was that dealing with secondary schools of forestry. Schools of this type developing men for the lower grades of work in forestry are common in Europe but are practically non-existent in America. Colonel Graves raised the question as to their advisability. Relatively few men stressed this point and the opinions would be hard to summarize. We would say, however, that the Conference felt the need of training of this kind but that there were so many very grave obstacles in the way of carrying it out. Supervisor M. A. Benedict of the Sierra Forest perhaps expressed the failure of present-day education as well as any speaker, when he said that the usual four years undergraduate course was hitting exactly between the two types of men that are needed. On the one hand, men with a small amount of forestry and a good vocational training are needed to do the routine jobs on the ground, while on the other hand, a number of really well-trained research men are needed. The larger number of forest workers belongs in these two classifications; yet the present-day educational system gives too much education for the one job and too little for the other. Other speakers touched on the difficulties surrounding a vocational education, pointing out that most men were ambitious and would fight shy of an education of that type that would not promise to give them sufficient training for advancement to the highest positions. On the whole, no very definite stand was taken on this question.

In view of what has been said so far, it may seem to the reader that this Conference was very much like those which our friend Omar attended in his youth:

"Myself when young did eagerly frequent
Doctor and Saint, and heard great argument
About it and about: but evermore
Came out by the same door where in I went."

and indeed perhaps nothing very definite did develop from these discussions although they had great value in showing just where the criticisms of the forest schools generally lie. Of much more concrete value, however, was the report of Colonel H. S. Graves, which was presented early in the session but which we have reserved until last as really summarizing the Conference better than the general discussion.

In 1925 the National Committee of the Academy of Sciences undertook to make a study of the forestry situation in the United States and Europe with reference to the fields of research and edu-

cation, Colonel H. S. Graves being selected to make a survey of the educational field. At this Conference he presented a résumé of his report.

Colonel Graves, after explaining the circumstances surrounding the study which he has made, expressed the opinion that the American forest educational system is ill-balanced, in that we have too many forest schools all trying to do substantially the same thing. In Europe the system is quite different, for there are not only the so-called high-grade schools—usually run by the Government, but other classes of schools less rigid in their requirements and giving a different kind of training, as, for example, the so-called intermediate schools of Europe which are not at all represented in America, although the North Dakota Junior College of Forestry falls somewhat near this category. Colonel Graves furthermore stated that in his opinion the majority of the positions in forestry, particularly in connection with private ownership, would be of an intermediate character, but he was not positive as to what courses of study should be set up to best prepare men for these positions. In view of the studies which he made in America and Europe as a foundation for this report, Colonel Graves recommended a thorough-going study of the American forest school system by an expert outside agency, estimating that \$30,000 would be necessary to do this work in a satisfactory manner. It is obvious that no one man, nor a series of conferences will be able to solve the extremely difficult problems now confronting the American forest school. Colonel Graves' plan for the investigation covers nine points:

1. A study of student personnel to ascertain the type of students and the reason for their choosing forestry, etc.
2. An occupational study, the object of which would be to find out the types of positions held by the graduates of forest schools, in order to learn whether the training is calculated to meet the needs of the profession.
3. A study of the broad educational requirements for different lines of work in forestry—a study that would depend in a certain measure upon the results of "2" above. Its object would be to show whether the present type of school is competent to meet the needs of forestry, or whether we need intermediate and secondary schools.
4. A critical study of curricula with special reference to foundational subjects.
5. A study of educational facilities, such as equipment, teaching material, and library.

6. Investigations of methods of teaching, looking to improvement in the actual work of instruction.

7. A study of school faculties to determine the necessary size and training.

8. Consideration of research in forest schools, leading to a definition of the function of the forest schools in research.

9. A study of the general standards of the schools, aiming to bring all schools up to the highest standard compatible with our available resources. There is no intent to make the schools standardized at all.

The report of Colonel Graves was well received by the Conference, which went on record as being in favor of such a study in the immediate future.

The companion report of the Committee of the National Academy of Sciences regarding forest research was also briefly covered by Dean E. D. Merrill of the College of Agriculture, University of California, a member of the Academy of Sciences Committee; but that is too long an affair to go into here and is somewhat apart from the general trend of thought in the forest school conferences, so we are leaving that for a report at another time.

To summarize, then, the keynote of the Forest School Conference was how little we really know of the concrete remedies for the present situation in forest education. It was clear enough that neither employers nor educators were satisfied with the way things were going, but specific remedies could not be proposed by either the graduate foresters, employers, or the teachers. Accordingly, the report of Colonel Graves is of the highest importance, and from the attitude of the conference it is obvious that the work will receive the support of foresters in all those phases where co-operation in this far-reaching plan can be made effective. It is hoped that in two years a report can be made and that we will really know in some detail what is wrong with forest school education in America and, still better, what we can do to rectify the present errors of our system.

THE RÔLE OF WESTERN WOOD PRODUCTION IN SUPPLYING THE FUTURE MARKETS OF THE NATION AND THE WORLD*

By WILSON COMPTON, *Secretary and Manager*
National Lumber Manufacturers Association

Our migrant industry has found the end of its westerly wanderings. There are no forests on or under the waters of the Pacific; here it must stand, and live or die. And the last stand is wonderfully endowed by Nature and favored by the march of events for a victorious issue—not merely one of bare survival, but of triumphant achievement and vigorous revival. But while the prospect pleases, the present is not so bright and warns us not to trust too much to Good Fortune. It would be a grateful task to picture, in glowing terms, unclouded by doubt and misgivings, a carefree future for this western forest land. There are, however, stern realities that we must face; and afterwards we must take thought and prepare ourselves for the bitter battles of trade that impend.

Before attempting to discuss the place of our western forests in supplying future markets it will be well to consider briefly the lumber industry as a whole, and especially the sources of its raw materials. In 1926 the lumber production was 37,000,000,000 board feet, a decrease of 3.7 per cent as compared with the production in 1925. This cut was distributed as follows among the more important commercial species:

	Quantity M bd. ft.	1926 Per Cent Distribution
All species	36,935,930	100.0
Southern yellow pines	11,751,647	31.8
Douglas fir	8,806,535	23.8
Western yellow pine**	3,172,975	8.6
Oak	2,190,504	5.9
Hemlock	2,158,652	5.8
White pine	1,366,051	3.7

* Presented at annual meeting, Society of American Foresters, San Francisco, December 16, 1927.

** Principally "Pondosa" pine and "California white" pine.

	Quantity M bd. ft.	Per Cent Distribution
Red gum	1,133,347	3.1
Maple	829,020	2.2
Cypress	752,499	2.0
Spruce	647,191	1.8
Redwood	487,715	1.3

Softwoods made up $82\frac{1}{2}$ per cent of the total cut and hardwoods $17\frac{1}{2}$ per cent, or 30,500,000,000 and 6,500,000,000 feet, respectively. The western species coming from states bordering on or near the Pacific Coast, aggregate 57 per cent of the total softwood cut.

Lumber exports for 1926 represented approximately 8 per cent of the total cut. Softwoods, the group of woods in which we are particularly concerned, represented 88 per cent of the total exports. The exports of softwood sawmill products are made up of the following woods in approximately the proportions indicated:

	Quantity M bd. ft.	Per Cent
Douglas fir	1,250,160	54
Southern yellow pines	704,553	30
Hemlock	179,669	8
Redwood	47,855	2
White, west yellow and sugar pine	32,038	1
Cedar	27,955	1
Spruce	20,497	1
Other	66,995	3
	<hr/> 2,329,722	<hr/> 100

NOTE: Hemlock is practically all West Coast Hemlock, Cedar is mainly Western Red and Port Orford Cedar.

A noticeable feature of the export reports is that the principal foreign markets for western species are the countries bordering on the Pacific, while the principal markets for eastern and southern woods are the West Indies, Central America, and South America countries, and various countries of Europe and Asia. This is to be expected, of course, because of the geographical relationship of these regions and also because western woods have been in world trade for only a relatively short time. Also, Douglas fir, the most important West Coast wood from the standpoint of quantities involved, was a comparatively new species commercially, and the older markets were not

familiar with it and its characteristics. The same situation existed with respect to other western woods. In addition there is more competition with the lumber of other countries in the markets of Europe than in those of the Pacific regions.

At present our western species occupy a very advantageous position in the timber markets of the world. They are available in large quantities and in sizes and quality that can satisfy the most exacting requirements. They are located favorably as regards large potential foreign markets, namely, the Far East and countries bordering on the Pacific Ocean. Moreover, they are now being placed in our own eastern markets in competition with eastern woods, largely through the advantages of favorable water shipment rates through the Panama Canal; and can be expected to enter those markets in increasing quantities. The establishment of large distributing yards on the Atlantic coast by western lumber manufacturers shows a determination to enter that field vigorously and persistently. Not only are the higher grades being placed in those markets, but also the common grades used for ordinary construction purposes are being successfully distributed in competition with lumber from the adjacent regions.

According to Zon and Sparhawk in their book, *The Forest Resources of the World*, the total stand of softwood saw timber in the United States is approximately 1,755,000,000,000 board feet. Of this, western softwoods represent 78 per cent, or nearly four-fifths; while eastern softwoods make up 22 per cent, or slightly over one-fifth. Eighty-four per cent of these western softwoods are found in the Pacific Coast region and 16 per cent in the Rocky Mountain region. Not only does the Pacific Coast region contain the largest domestic supplies of standing timber, but the species found there are especially fitted to a variety of uses and purposes. Some are of sizes and characteristics that make them desirable for construction purposes, others are naturally durable and resistant to decay, while still others are admirably suited to special uses because of their working properties. Practically all can be secured in large dimensions and long lengths of excellent quality.

According to the best estimates available, the saw timber consumption of the world is distributed among the continents in the following proportions:

	Per Cent
North America	56.9
Europe	35.0

	Per Cent
Asia	6.1
South America	1.0
Africa5
Australia, New Zealand and Oceania5

North America and Europe dwarf the rest of the world as markets for timber, representing over 90 per cent of the total consumption. And the greatest single market is here in the United States, which alone accounts for almost 54 per cent of the total saw timber consumed in the world. These two continents can be expected to continue as the chief markets far into the future. Japan, China, South America, Australia, and the other countries bordering on the Pacific, however, will undoubtedly require much larger quantities of softwood timber for construction purposes as they become more populous or more industrialized.

Our principal present competitors in supplying the softwood timber markets of the world are Canada and the countries of northern Europe including Finland, Sweden, Russia, and to a lesser extent Norway and Poland. These European countries export chiefly to countries in Europe, South America, Africa, and to a less extent into other world markets. Russia still has large virgin softwood forests to draw upon, and while the others have been cutting timber for long periods of time their forests are in a permanently productive condition and will continue to furnish large quantities of material for the export trade. That they are a very real competitive factor is shown by the fact that shipments of pine and spruce from Europe are being received occasionally at our Atlantic Coast markets. Recently a single cargo of 2,500,000 feet of pine and spruce was received from Russia. Although this may be more or less in the nature of an experiment, there is the possibility of such practice growing, as Russia has the advantage of cheap labor and low ocean cargo rates. In the European markets our foreign competitors have the advantages of lower freight costs, a better understanding of the markets and trade customs, and nearness to the markets. In addition the consuming countries of Europe are familiar with the woods of the European producers and their manufacturing practices, and are habituated to dealing with them. An article in a recent number of an English timber journal says: "It is of interest to note that Poland is the third important supplier of lumber to the English market, being exceeded only by Finland and Sweden. The Poles have done much to encourage their English business by

adapting their manufacture to British specifications." This suggests that European markets will have to be studied carefully if we are to enter them on a larger scale. That the consumers in England and on the Continent are in general unfamiliar with American woods is illustrated by a recent communication from England which states, in part:

Authoritative technical data regarding many American woods is practically unknown to the engineering profession and related government officials, placing these woods at a great disadvantage with European competitors.

This statement has particular application to West Coast woods which are comparatively recent competitors in European markets.

In the markets of the countries bordering the Pacific our Western woods already have a strong position. For example, of the 1,500,000,000 feet of lumber imported into Japan in 1926, almost 88 per cent came from the United States, 7.6 per cent from Asiatic Russia, and between 4 and 5 per cent from Canada. In these markets of the Far East the vast supplies of undeveloped Siberian timber can be expected to be an important factor. The cut of timber of the North European countries is controlled in order to assure a permanent supply, and, therefore, the quantities that will be exported from those sources can be estimated roughly. It is impossible to predict how rapidly the timber resources of Siberia will be developed and marketed, but they will undoubtedly be an increasing factor in the markets of Japan, China, and other far eastern countries. Our western woods are prominent in the markets of Australia and New Zealand. Douglas fir, for general construction purposes, is the dominant species as in other Pacific markets. Redwood and western red cedar are imported for outside house finishing, and spruce and hemlock are brought in as shooks for butter boxes, cheese crates, fruit cases, etc. There is and probably will be greater local competition from New Zealand woods in the box shook industry; and in Australia more competition from native hardwoods for structural purposes.

The place of western woods in world markets depends mainly upon these factors:

1. Competition by foreign countries
2. Judicious administration and use of present supplies of timber
3. Provision of future supplies

The timber exporting countries of northern Europe are operating their forests for permanent production, and will continue to have large quantities of lumber for export. Many other foreign countries

are attempting to establish forests and are planting large areas. Although the results of this work will not be felt for many years it is a factor to be considered in the long run.

Wise use of our timber is of paramount importance. The present stands of western timber have matured for hundreds of years and are of a size and quality that cannot be equalled by succeeding growth. Admirable efforts are being made to eliminate fire, which is the most evident of the present causes of forest destruction. Large quantities of valuable timber are being destroyed annually; increased vigilance and education will be required to reduce fire losses.

Other steps essential to the fullest utilization of these resources are well known to you: reduction of losses due to insect attack and decay, more economical methods of manufacture, better methods of seasoning, adoption of uniform size and quality standards; better financing and merchandising; judicious regulation of production; and the selection of species, sizes and quality to fit the particular requirements of specific uses. Although much has been accomplished in these fields we still have far to go. Especially deplorable is the present profligate production for fortuitous markets.

At this point I hope I may be permitted to say a few words about co-operative trade extension. I am firmly convinced that nothing will have a more powerful influence on the perpetuation of our forests and the introduction of permanent forest management than the economic stabilization of the forest industries. Forestry must pay or there will be none. Trade extension aims at making the forest industries profitable and, therefore, forestry possible. In the language of Colonel Greeley, we say, "Use wood and replace the forests." In no other industry is there so much need of concerted group action as in ours, not only for the mastery of the foreign trade but for prosperous functioning in the domestic market. The western lumber industry is well organized and ably led in four great groups—Douglas fir, Ponderosa pine, redwood, and California white and sugar pine. The beneficial achievements of these splendid organizations are limited only by the degree to which they are financed. Just beginning, and I believe with a brilliant future before it, is the National Lumber Trade Extension Campaign which hopes to supplement all of the trade extension activities of the western, as well as all other regional groups. It is healthy, no doubt, for regional groups to compete with each other but they should always remember that lumber is their common mother, and it

will be the work of the National Trade Extension enterprise to protect and cherish her for the benefit of all her children. It will not profit us if, whilst we cheer for our particular species, the constricting circle of competing materials leaves room for none of us. As our associations progress with their trade extension work, we may hope that the commercial chaos that has been so unworthy of these magnificent forests will be overcome.

Interest in the possibilities of providing for future timber supplies has grown rapidly during recent years. Revision of taxation laws in a number of states has removed a heavy burden from commercial forestry. Many operators are now systematically controlling cutting to prolong, if not to perpetuate, their forests and are protecting cutover lands. Although the efforts in the direction of renewing the sources of supply are as yet small compared with the possibilities, they are distinctly encouraging, and without doubt will multiply greatly in the near future. The recent conference of commercial forestry interests in Chicago is indicative of the deep interest timber owners take in these subjects, and can be expected to have an encouraging effect. Certain it is that the new West Coast forests will have advantages both in rapidity of growth and quality of wood over the permanent forests of Europe.

The magnitude of the present supply of Western species of superior properties and available in large sizes assures markets for many years to come. During those years we can, if we will, and the economic conditions permit, replenish our forests and continue indefinitely as a chief producer and exporter of lumber. No other forest region in the world has a brighter prospect—but in no previous period in this country have bright prospects required so much energy and acumen to realize them. As ever, the battle is not always to the strong or the race to the swift.

A FOREST PROGRAM FOR THE WEST FROM THE POINT OF VIEW OF NATIONAL NEEDS*

By C. M. GRANGER

District Forester, U. S. Forest Service

The West cannot be expected to grow timber to meet the national need unless it pays. The national need must translate itself into opportunity for the West—opportunity to turn forestry into wealth and well-being, if the nation wants its wood needs supplied in part by the West.

Actually the national need means the need of the East, using the term "East" to apply to the region east of the Mississippi, for the West can now and probably forever supply its own wood requirements.

We can reduce this question to compact dimensions by elimination. It does not apply blanketwise west of the Mississippi. Of the forest-land states, South Dakota, Wyoming, Colorado, New Mexico, Arizona, Utah and Nevada can be dropped out of the picture right away, for two reasons:

1. The great bulk of the timber-growing land is in the national forests and will be kept productive.
2. The greatest possible wood yield above local needs is too small to count heavily toward the national need.

This leaves Montana, Idaho, Washington, Oregon and California. Of these, California already consumes annually more than it produces and will likely always use more than it can grow even under the most intensive forestry practice.

This leaves four western states with present and future exportable surpluses. In these four states there are, roughly, one hundred million acres of absolute forest land—land that will produce no crop but timber. Of this, a little more than two-thirds is in the national forests, and we may assume perpetual forestry thereon. This leaves about 30,000,000 acres of private forest lands. On this 30,000,000 acres our problem focuses—is reduced to its smallest possible dimensions.

What are the inducements to grow repeated crops of timber on these private lands? They lie not in patriotic appeal, not in the owner's

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sense of public obligation, for no matter how altruistic the private owner may be, he cannot remain solvent if he grows timber crops for no more pay than the gratitude of his fellow man. The urge back of him is the desire to perpetuate his industry and his investment with profit both to himself and the dependent community; to realize the most out of his growing acreage of cut-over lands which are fit only for forestry.

What are the inducements to the public in these states to aid in developing industrial forestry? Such cannot, by the very nature of economic laws, lie in neighborliness. Rather they are found within the borders of these states themselves and are briefly these:

1. The 30,000,000 acres of private forest lands are almost entirely fit to produce only one crop—timber. This vast acreage can pay taxes only if profitably working at the job of growing tree crops. It is the choicest forest land in the region. Most owners are holding onto their cut-over lands for the time being, first because they have to pay about so much in taxes anyway, and second because they want to be sure of how these lands can be made most profitable to them. But there is already a big delinquent acreage. There are, for example, already about 1,500,000 acres of tax delinquent forest land in Oregon, mostly cutover.

2. The very existence of a great many communities depends on forest industries. In Oregon, for example, it is roughly estimated that of the towns with a population of 500 or more, over 40 per cent are chiefly or entirely dependent for livelihood on forest industries. In Washington the percentage is forty-four.

3. Timber harvesting and manufacturing furnishes the bulk of the industrial pay roll—about 65 per cent in Oregon and Washington. And in these four states the marketed products of the mills put close to \$375,000,000 in circulation every year.

4. The railroads and ships of this region depend in very substantial measure on forest products for their freight, their prosperity, and their ability to maintain enduring freight rates on other commodities. From 65 per cent to 80 per cent of all outgoing tonnage from Oregon and Washington is wood products.

These, then, are the major inducements. They are local, not national. It would be well if this were universally understood. Even among foresters there is too much of a tendency to lay an obligation on the West to grow timber as a national duty. That avails nothing.

But national needs, if they exist now or later, may be met by competent technical assistance to western forest-land owners in keeping their lands at work—if it can be demonstrated to be profitable, and by stressing the compelling local reasons why the western public is vitally concerned in the matter.

What can these four states—Washington, Oregon, Idaho and Montana—with potential large exportable surpluses, expect in the way of receptive markets? This should be answered in terms of a long look ahead. At present the bulk of the products of the choicest virgin stumpage of this region are being dumped on eastern markets at distress prices which in the main cause year-end entries in the red on the producers' ledgers. As is well known, this is due chiefly to two things—overproduction under increasing interest and tax burdens, and much poor merchandising. It has been going on for some time and it can't stop right away. And this largely unprofitable unloading process out here is making it impossible for some of the receiving regions to utilize their own trees at a profit. For example, Wisconsin hemlock is said to be unable to meet western lumber price competition in the hemlock's own territory. Some forest land owners in New England complain that they can't afford to grow timber at the price set by the "must-be-cut" west coast fir.

This is happening while the Lake states and New England are perhaps at or near their lowest ebb as timber producers and while the Pacific Northwest is still cutting its lumber from virgin stands. What will be the situation fifty years or more from now? If industrial forestry out here is going to bring the desired wealth and stability to owner and community alike, it must be on a permanent basis. It must deal with the next and succeeding crops, not alone with the present virgin stand.

Mason in his searching analysis published in the October, 1927, *JOURNAL OF FORESTRY* under the title "Sustained Yield and American Forest Problems," calculates that the nation will not be able to grow enough softwoods to supply the annual need gauged by present use alone. If that is true it would appear to offer much promise to Pacific Northwest forest-land owners of future profitable markets.

But I can't avoid some doubts. While the West now has the bulk of the remaining virgin timber, the greater part of the potential timber-growing acreage lies east of the Mississippi, close to the major demand. Growth per acre back there is in many places nearly as rapid as out

here in the fir region. Additional eastern land is lapsing from farm crops to forest crops. New England gained 13 per cent in forest land acreage during the sixty years ending in 1922. Between 1880 and 1925 New England farm acreage shrunk at the rate of 172,000 acres annually; in the middle Atlantic states the annual shrinkage was 236,000 acres. Between 1919 and 1925 in the country as a whole there was a decrease of 19,000,000 acres of harvested crop area and an increase of nine million acres of forest land, practically all east of the Mississippi.

The average lumber rail haul from the North Pacific states to the main markets of the East is 1,275 miles; from the South only 685 miles, and from the Lake states 415 miles.

The following significant item appeared in the press within the last year:

FORESTRY DEVELOPMENT URGED FOR VIRGINIA

A Harrisonburg, Virginia, dispatch to the press today says: "Holding that the American farm industry is now suffering from a price-depressing food-crop surplus production, the Rockingham Farm Bureau Federation, composed of 1,040 Shenandoah Valley farmers, yesterday petitioned Congress, through Virginia's Senators and Representatives, to divert Federal funds to be used in reclaiming farm lands in the South to the development of forestry and the production of timber. The resolutions will also be sent Governor Byrd and Virginia will be asked to use any reclamation funds it may have to the development of its forests."

Based on long range future probabilities, it seems axiomatic that the forest-land owners and the public in the East and South are going to put their idle forest acres to work just as soon as it is profitable to do so; and in several localities that time has arrived. If private forestry will pay at all in those regions—and it is proving slowly that it will—it is reasonable to suppose that it will be most profitable if practiced intensively. Under best forestry practice that region can raise nearly as much lumber as it now uses. That would leave a narrow margin wholly insufficient to absorb the surplus potential annual growth out here, which surplus is roughly estimated at 12 billion board feet, measured by present use. I speak in terms of lumber because that is the major product and the demand for lumber will largely control the future possibilities.

Probably you will say that consumption will increase. Very likely, but how much? It has been steadily decreasing per capita, and the total is not increasing appreciably despite huge construction programs

nearly everywhere in the country. Substitutes have made great inroads on lumber consumption. They will likely effectively check expanded consumption if prices of lumber go higher or even remain at present levels, unless the use of wood is more effectively popularized. The population will not increase so rapidly under our immigration restrictions as it did prior to 1925. Perhaps the peak of the building program for the country is passed.

I have purposely drawn the picture of the future in rather gloomy shades—probably more so than is warranted. But I think it ought to be made clear that this region out here which can grow more timber by far than it needs, or is likely ever to need as far ahead as we can plan, cannot sit still and wait for the exhaustion of the South's timber to bring lucrative prices for our timber products. That impression has been too prevalent. There will no doubt be a temporary advantage for several years after the South is more nearly out of virgin timber and while we have an abundance; but when we get into our second cuttings of lower quality the picture must change—and it is the long future we must visualize.

If forest owner and public unite I believe our region can profitably use all its real forest land for timber cropping. It will come through the working of economic laws and understanding joint effort. The time to begin on the latter is now. I suggest the following essentials of a forest program. I claim no originality, for they have all been discussed by others within recent years:

1. We have got to raise our next and succeeding crops of timber cheaply. This means getting natural regrowth in preference to planting just as far as we possibly can. This requires not only seed insurance and adequate protection of cutover lands, but a steadily increasing application of other forestry measures to insure the utmost productivity of the land. Owner and public alike need to think of our permanent forest enterprise in terms of little trees as well as big ones. A good start has been made. The federal government needs to carry out its financial promise under the Clarke-McNary law as a partner in the protection scheme of things.

2. More favorable forest-land tax laws are required. Here, too, there has been a good start, but the public is not adequately sold on this. More educational work is needed.

3. Then we need a sustained, aggressive market extension campaign such as is now under way. This should aim not only at finding

wider markets for our present products, but at finding new uses for wood. Along with this, there is a crying need to develop our wood remanufacturing industries. We ship out far too much material direct from the saw. Re-manufacturing creates added pay rolls, and finished products can afford to pay higher freight rates and seek farther markets than the rough product. We need particularly to develop foreign outlets. China ought to be a fertile field.

4. Better utilization will come with extended markets and new uses of woods. Closer utilization will obviously increase per acre profits. The rapidly growing pulp and paper industry out here will help materially in that line. Likewise, it will take more of our surplus growth.

5. Reasonably concentrated ownership will promote sound forestry practice. This is proven in other countries. Small owners are less apt to handle their lands systematically. The heavy over-cutting of second growth in the South also proves this. The same thing is taking place on a smaller scale in Oregon. The land and the community will both profit by larger ownership. This should be encouraged by law and governmental policy.

6. Sustained yield units must be organized to give security to both investments and community. National forest timber might in many cases with profit to the public interests be committed to a joint management with adjacent private timber where needed to round out a suitable sustained yield unit. Guarantee of proper forest practice on the private land and probably additional legislation would have to precede any such commitments.

7. Research results and dependable technical advice must be available to owners contemplating forest management. The advice most heeded is that which is bought and paid for. I would like to see the private consulting forester facilities expanded as rapidly as the business warrants.

8. It is at times difficult for me to see just how state forestry fits into the picture. Present ownership is chiefly private and National forest. As a business venture the states can less well afford to be in the forestry business themselves than to have private owners do part of it and pay taxes and the federal government do the balance and pay a per cent of the income. But undoubtedly a considerable portion of forest land now owned privately will be found not sufficiently profitable for private capital to hold, yet may yield a revenue to public capital

which goes tax free. Some of such land will fit in best as additions to the national forests. Quite a bit will not. Apparently the states will have to take it over if it is going to grow trees. Even if not highly profitable, I think the states ought to be in the forestry business on a substantial scale if for no other reason than that the general public of the state may have a first-hand acquaintance with the actual cost and profits of growing timber. Too many people now look upon both private and federal forest land as great treasure houses which yield their owners rich profits. It would probably be best to effect land exchanges so that state areas could be consolidated to facilitate management. The fewer ownerships in any one operating unit, the better.

9. A real inventory and classification of all the forest land in each state ought to precede all other steps. It is hopeless to expect that soon, so progress in other lines must not be held up. But the proper management of forest land will not be finally rounded out without such a classification. It should be one of the definite objectives.

Just one other thought. The so-called marginal farm land has in many places been found unprofitable to work. Will not the same thing be true of forest land? May it not be best for the forest-land owner, whether private or public, to concentrate his timber cropping efforts on the really productive areas? This would mean giving to the marginal forest lands only such protection and treatment as needed to keep them from being a menace to adjoining property, preserve their watershed, recreation or scenic value, or such other values as they may have aside from timber farms.

Summarizing: Let the western forest program be shaped to promote local stability and growth. The national need will be best served in that way.

INDUSTRIAL FORESTRY IN THE CALIFORNIA PINE REGION*

By S. B. SHOW

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In discussing industrial forestry in the California Pine Region, some orientation and definition is necessary at the outset. From a practical standpoint the problem concerns the operators of some 18 companies with a large output, which in the aggregate makes up about 80 per cent of the total cut in the State. This omits the group of large mills in the Klamath Falls Region.

While the many small operations in existence are of intense concern to foresters they nevertheless represent in the aggregate but a small fraction of the annual cut and land ownership, and in the interests of conciseness they may be left out of the present discussion.

For a forester in public employ it is much the safest course to say little regarding the large volume of public statements of one kind and another made regarding the status of industrial forestry in the region. The outsider in reading these would certainly receive the impression that the practice of forestry was the rule rather than the exception—a conclusion not exactly warranted by the facts of the situation.

Without discussing in detail the claims and counterclaims made so commonly and without ignoring the importance of the desires and intent of operators, it seems clear that the outstanding criterion must be the actual condition in which cut-over land is left, based on the actual woods practices now current in the region. In other words, the starting point of any reasoned conclusions regarding industrial forestry must be a knowledge of what is being done in the woods.

The logging practices necessary to leave cut-over lands productive have been the subject of careful study and we can say with confidence, barring occasional exceptions, that they are known with accuracy. In brief, these woods practices are: first, fire protection before, during and after logging, not alone against fires originating on the operation but against fires from other causes. Second, the preservation through the logging operation of not less than 50 per cent of the advance reproduction on which the future productivity of the cut-over land depends

* At annual meeting of Society of American Foresters, 1927.

in a very high degree. This must be accomplished primarily through the use of logging methods which do not have the capacity for destruction inherent in such systems as high lead donkey logging. Third, the systematic reservation and preservation of sufficient seed trees can be accomplished by cutting to a diameter limit of 20 to 22 inches.

Industrial or any other kind of forestry in the California Pine Region must be based on systematic application of all these measures. Much confusion has resulted from statements that fire protection is 85 per cent of the problem, carrying the implication that the other woods practices are of rather insignificant weight. It is of course true that fire protection is vital, but it alone, if the other two major planks in forest practices are ignored, is likely to find little to protect after logging is completed. In other words, fire protection, saving of seed trees and preservation of young growth must all be done before even this relatively crude type of forestry becomes an actuality.

We must recognize clearly that at the present stage of forestry in the Pine Region, the dominant objective is not to obtain the maximum yield of the most valuable species from every acre, but is rather to keep most acres producing a stand of some species in sufficient volume to constitute in the future a loggable forest. The minimum requirements above set forth are aimed at that objective, and industrial forestry of today should be judged by the degree to which they are being executed and not by the prevalence of refinements which must come later in our forest work. An alluring thought which needs little discussion is that the solution of the whole problem lies in denuding the lands at the time of logging and then planting. Planting has a place, and a large one, in forest practice of the region, but with many hundreds of thousands of acres already requiring planting, it would be folly to add deliberately to this total. It is axiomatic in good forest practice anywhere, that natural regeneration should be employed in preference to planting wherever possible. And certainly in this region this principle needs to be generally accepted in order to focus thought and effort on the few simple and practical steps which can almost entirely avoid the necessity for planting.

Perspective on the status of these three simple, essential and practicable forest practices can best be obtained by comparing the woods operations of six years ago, when a detailed regional survey was made, with the situation today. In the vital field of fire protection enormous steps have been made largely by the industry and the

individual operators themselves. In 1921, eleven of the 18 largest operators were still broadcast burning their slash with a consequent denudation of their cut-over lands or were complacent towards summer fires, or were practicing light burning in some form. These 11 operators accounted for about 75 per cent of the annual cut-over acreage. An even larger number of operators in 1921 ignored such essential measures as installment of adequate spark arrester, provision of tools for fire fighting purposes, clearing around donkey settings and along railroad rights of way, and prompt, systematic handing of operation fires. In fact, only 4 of 18 operators were making a serious effort to conquer the fire problem in their territory. A series of disastrous fires with heavy suppression expenditures and heavy loss of timber and equipment finally led the industry itself to face this problem squarely and to attack it on a comprehensive scale. Not only was this frank recognition of the problem expressed in protection measures in the woods but by the united support of the industry for legislative measures, National and State, which would compel action by the few recalcitrants and would build up the effectiveness of public fire control organizations. Today we find but a single major company which still placidly ignores the whole fire problem and still burns over its lands as rapidly as they are cut over. Two other operators, though protecting their lands against summer fires, still practice light burning and at least partially nullify the results of their own protection efforts. The great majority of operators, however, mean business in their efforts to conquer fire and have attained a conspicuous degree of success in that effort. It cannot yet be said that fire on logging operations is a thing of the past, but so much progress has been made that we can confidently expect the cut-over land fire to become less and less of a threat to our forestry. In this campaign the industry has acted together very effectively, has co-operated with other protection agencies and has demonstrated its ability to meet its own problem.

In preservation of young growth in logging operations in the past six years there has been substantial progress. In 1921, all of the major operators but one were in the heyday of high lead donkey logging and most cut-over land had so little reproduction and so few seed trees left that even the most optimistic view could see little hope for a future loggable stand. There were of course differences in the degree of destruction depending on the power of the machinery employed and on line speed. Today though the high lead is still employed on a good

many operations, it is by no means the dominant logging method of the region and on several important operations has been abandoned. In its place has come the rapid increase of the use of the tractor as motive power, and because this method, if properly handled, will do little injury to the seed trees and young growth, cut-over lands now are on the average left with a substantially larger growing stock than formerly. The high lead method, where it is still used, is just as destructive as ever, and from the standpoint of the region we cannot say the problem of logging damage is even *nearly* solved.

It would appear that the wholesome change from high lead to tractor logging except in so far as enforced by National Forest timber sale contract, has been made purely in the interest of operation economy with little consideration on the effect of seed trees or young growth. This becomes clear when we find that on the private lands no effort is made to minimize the very considerable damage which can be caused even by the "cats" and the general use of "high ball" logging with these "cats." From the standpoint of the forester, the situation as regards logging damage is very much better than it was six years ago, but it certainly gives no ground for a complacent belief that the problem is solved.

Six years ago, the survey disclosed an almost universal practice of cutting the pines to a diameter far below the seed bearing size. Wherever enough seed trees were being left to insure restocking, these trees were almost always the less valuable firs and cedars. It was generally true that in pure stands of pine no seed trees were provided and in the mixed stands of the pines and firs the second forest would be predominantly fir. In the past few years some of the companies have made conscientious effort in the right direction. In most of the cases with which I am familiar, it is difficult to believe that the occasional small pine seed trees which have been left are likely to restock the area to any worth-while degree. Still there are a few isolated instances where selective cutting has really met the issue squarely. For the region as a whole, there has really been no improvement in selective logging for the purpose of providing seed trees.

In the process of developing protective organizations to care for private lands which six years ago were either unprotected or poorly protected, and in the enforcement of fire laws, many difficult questions affecting the Federal Government, the State, the industry and the individual operators, have arisen. Nearly all of these have been worked

out in a sensible and satisfactory manner and as the Clarke-McNary Act, other legislation, and additional fire protection funds have fitted into the picture, we can say that today the whole fire control situation in the State is very much more satisfactory than it was. The industry has perhaps been slow in recognizing its vital interest in the protection of the very inflammable non-timbered foothill belt, where fires so commonly originate and sweep with terrific force into adjacent timber and young growth areas. A clearer recognition of this problem as one inseparable from the control of fires on timber lands is needed before the whole protection system in California can function most effectively.

It is well to give due recognition to some of the factors and conditions which have operated in the California Pine, no less than in other regions, as deterrents to industrial forestry, and which, even up to a few years ago, appeared serious enough. The inadequacy of the efforts to protect cut-over lands made the complete destruction of investments on such lands a strong probability. A second factor which naturally enough has acted as a deterrent, was the lack of definite knowledge of the costs of forestry practice and the probable returns in the shape of timber yields. Still a third factor which gave the private owner good cause for holding back, was the uncertainty surrounding the taxation of cut-over lands and immature stands. Although in California the actual scale of taxation of such lands has never been excessive, the system in effect has the possibilities of confiscatory taxation, and the uncertainty regarding future county revenue policies no doubt constituted a genuine business hazard. Probably an additional factor has been the scarcity of competent foresters, other than those in public employ, who could expert individual holdings and give the management sound technical advice and plans for action.

If again we examine the changes which have come about in the last few years in these respects, we find first of all such striking progress, largely due to the industries' effort in mastering the fire problem, that even the most cautious management can now proceed on the firm ground that well known and relatively inexpensive practice can and will make very unlikely any catastrophe affecting adversely the productivity of large areas of cut-over lands. Fire as a major factor in industrial forestry, requires constant and indeed increasing attention, but no longer can be regarded in itself as a sufficient reason for lack of constructive land management.

Great progress has been made as well, in better understanding of the costs of forest practices connected with the logging operations such as those outlined earlier, and it is now possible within reasonable limits to calculate for a given operation, the costs either for minimum requirements or for more advanced forestry such as that found on National Forest sales. Perhaps the most significant feature of this fact-finding process has been the gradual demonstration that clear-cutting or anything approaching it, was poor operating economy, because the cost of handling and manufacturing small trees is greater than the returns from them. This aspect of selective logging, making it not a costly public duty but a good business operating economy, has not yet made itself generally felt in the woods practices. Here and there, however, it is being acted upon with direct returns in the shape of more productive lands.

Although much additional research is needed to obtain full information on the yield capacity of pine lands in California, enough is now known to show beyond doubt that the growth possibilities, at least on better lands, equal or exceed those in other regions where industrial forestry is becoming an accomplished fact. At least we can say fairly, that industrial forestry here offers genuine opportunities as a straight business venture. In earlier studies and discussions it was commonly assumed that a second cut could be obtained only after a lapse of a period of years corresponding to the total age of the trees when cut. The research and practice of recent years now show that selective logging will make possible a second cut at roughly half the rotation age, and this possibility enormously increases the attractiveness of industrial forestry in the pine region.

Taxation as a barrier to good forest land management has been definitely put aside by the enactment of the State constitutional amendment definitely controlling and limiting the taxation of young forests. Any preferential tax legislation is prone to be misunderstood and defeated in a popular vote. The fact that this particular act received a majority vote in practically every County in the State was due not only to effective co-operation between the industry and foresters but is eloquent proof that public sentiment in California recognizes the obligation of the public to facilitate industrial forestry and is wholeheartedly back of the industry in its efforts to make industrial forestry an actuality. It can be inferred moreover that this same intelligent

and sympathetic public opinion will now expect definite and measurable results to follow in the wake of this legislation.

Not so many years ago the private owner who desired experting of his own property could scarcely find men qualified to undertake this. The general information available for a region as a whole is valuable in determining regional land management policies, but cannot possibly take the place of facts and detailed plans specific to the operation. This inability to obtain competent professional services has been one of the factors contributing to the slow rate of progress to this and other regions. Today, however, it can no longer be regarded as a factor because the field of consulting forest expert has become one of the recognized branches of the profession. Looking therefore at the barriers existing a short time ago, it now appears that they have been measurably lowered or have ceased to exist entirely. This being so, the conclusion seems reasonable that the profession has made marked progress in fulfilling its obligation to clear away the misunderstandings and impediments and in aiding to create favorable and generally intelligent public opinion. It has left the private owner in a more advantageous position than he has ever enjoyed to go right ahead with actual forestry practices.

Successful industrial forestry in the long run involves not alone the production of timber on the cut-over lands and the treatment of lands so that this may be possible, but concerns as well a plan of management for the entire operation, so that sustained yield or continuous cutting may become a reality. In this region where most of the large companies still have a large reserve of virgin stumpage, the opportunity exists in full measure for actual sustained yield, provided the correct treatment of land and management of operation begins without undue delay. On some of the older operations in the region, where disregard for the condition of cut-over land characterized the policy of the company for many years with its resultant destruction of productivity on from one half to three fourths of the cut-over acreages, the devastation is only too obvious. The opportunity for sustained yield cannot be recaptured, once it is allowed to escape. I have in mind one operation where at the start sustained yield was perfectly attainable, but where, because of continued mistreatment of cut-over lands, the opportunity has vanished. The company now faces the end of its timber supply and the scrapping of its expensive plants.

To what extent the California pine companies who still have the opportunities for sustained yield on their own properties are definitely planning for this, it is impossible to state. In general, one can infer that in most cases sustained yield, except where it is being worked out by the Forest Service and the operator, on areas involving large amounts of public stumpage, is not an actual management policy. This conclusion would be based on the type of forest practices actually found which, following the thesis of this paper, should be considered the true criterion of the status of industrial forestry. Wherever we find such conditions as clear cutting or the employment of light burning, —a practice disapproved by the industry itself—or the continued use of high lead logging when less destructive methods could be employed, it is not unfair to conclude that conditions in the woods are a more correct picture of the land management plans of the company than any statement of intention.

This summary of conditions of industrial forestry in the California Pine Region leaves as its major conclusions that the barriers to private forestry have been largely removed or reduced; that the opportunities for profitable business ventures in growing timber are present, but that nevertheless, the actual amount of industrial forestry worthy of the name is far below what might be expected. It seems evident that there remains the apparent disinclination on the part of timber operators to go ahead in the actual practice of forestry. In the past, land owners have been generally urged to take up the practice of forestry as a public duty and it is perhaps too much to expect that the after effects of this single purpose campaign will wear off at once. What is needed now is impartial and critical examination of the actual commercial opportunities for private forestry without the background of public obligation which colored the situation in the past. To the extent that this hesitation and hanging back exists, it is an indication that foresters, including those connected with lumber companies, have not been fully successful in placing forestry as an industrial venture squarely on its own merits.

The inherent and basic difficulty of the situation lies in the state of mind of the industry—and the major job of the profession is to substitute for the blinding instinct of self-preservation the more normal function of plain, business judgment which has faith in a continuing lumber industry.

FOREST LAND MANAGEMENT BY PRIVATE OWNERS IN THE DOUGLAS FIR REGION*

By C. S. CHAPMAN

Forester, Weyerhaeuser Timber Company

The topic indicates discussion of what is being done, what should be done and what owners think can and may possibly be done with forest properties.

Until recent years few owners did other than follow a practice of protecting their timber from fire, wrangle with the tax assessor, look out for trespass and, as the case might be, either proceed with exploitation of the forest or be open to a proposition for sale to an investor or operator. If an operator was removing the forest from land with agricultural or other possibilities, the chances are that effort was made to dispose of this. There are even cases where such effort extended to lands having slight value for other than forest growing and perhaps not too great value even for that purpose.

In a few instances, forest land owners early began to think of the possibilities of growing successive timber crops and had properties examined with this in view. Early Forest Service records will bear evidence of the truth of this statement.

However, my guess is that failure of stumpage values to advance as expected; the ups and downs of the lumber market in the Pacific Coast region and heavy increase in carrying costs, soon required so much attention on the part of land owners in order that their marketable values might be protected that the thoughts of those who ever had any on the subject of forest growing were very largely sidetracked because of current affairs. It is true, too, that much exploitation took place on lands having real agricultural value, that a certain demand then existed for such property and considerable of it was sold at a good figure.

Today the situation has changed. It is true that financial expectation in the lumber industry, generally speaking, has not been realized, but other factors have developed. The market for stump land, even when favorably located, has fallen to a very low ebb. Most

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of the areas now being logged have no agricultural possibilities. It is realized that even the West, though still having a vast amount of standing timber, does not possess an inexhaustible supply and many land owners have accumulated large areas of non-salable cut-over land. Owners for one reason or another are loath to allow their cut-over lands to revert for non-payment of taxes and but few have taken this course. Some of the early cut-over land, that which has escaped fire, now bears fair sized second growth and owners can see hope in holding it for future returns.

In the meantime, fire protection has been extended more and more thoroughly to cut-over areas, and, as most of you know, such protection is now required by law throughout the Douglas fir region. For the benefit of those who may not appreciate this, I will say that timber land owners have not only concurred with such legislation but have very largely been responsible for its enactment.

It might also be well to state that protection of deforested areas is less satisfactory, viewed from the standpoint of results, than that of protection of timbered lands. This is not because of lack of effort but because of the physical difficulties encountered. Annual losses of mature timber in the Douglas fir area are comparatively light. The area of reforesting land annually burned over is far too great.

Present tendencies. The foregoing perhaps gives some idea of the situation existing in the Douglas fir region. Owners of the some 12 million acres of timber land, one third of which has been cut or burned over, are, generally speaking, alive to their responsibility as land owners to handle this property in such a way that it will give best results for themselves, their stockholders and the public generally. They feel, I think, too, that this responsibility is shared with the public and that, unless conditions are made such that they may see chance of profit in growing trees, they cannot be expected to fly in the face of Providence.

A plain general statement of the condition of forest land management in the Douglas fir region would be, that holding companies are to the best of their ability guarding their properties against fire loss. Operating companies are also doing this, but in connection with their operations they also are leaving cut-over land in better shape than formerly through cutting of snags, paying greater attention to slash burning and planning operations with a view to better handling of the fire problem.

In addition and as regards the cut-over land situation, owners are taking a decided interest in possibilities of forest growing. In numerous instances such properties have been subjected to careful examination in connection with existing timber holdings, and owners are either taking action to follow out recommendations of foresters or have these under consideration. As stated, few owners have allowed lands to revert for non-payment of taxes.

In a few instances, fairly elaborate plans looking to perpetual operation are being carried out and planting is being conducted to insure prompt re-stocking, nor is the Douglas fir belt without its municipally managed forests, principal among which is the Cedar River Watershed of the City of Seattle.

The prospect is distinctly encouraging as I view the situation. Not only is better fire protection going to insure an increasing area of re-stocking lands, but the prospects of a considerable number of operations being placed on a sustained yield basis is hopeful.

Planting on any considerable scale will not, in my opinion, be taken up for some years to come, and, when a general custom, it will doubtless take the form of the planting of fall spots.

The establishment of an extensive pulp industry in the West is likely to aid materially in the reforestation movement. It will not only enlarge the market for certain kinds of timber, thus having a possible favorable effect upon stumpage prices, but also aid in the slash disposal problem through making closer utilization a possibility. While it is probably true that only the existence of very cheap labor makes feasible utilization to the extent this is practiced in some European countries, nevertheless, there is room for decided development along this line, particularly in our Western forests, which will serve the dual purpose of practical conservation and better return for the stumpage owner.

Obstacles to forest practice. For some reason the list of obstacles to forest growing, even in a country as favored by climate, soil and tree species as the Douglas fir area, is fairly long. Some are very real, some perhaps imaginary. Some are the result of organization of the lumber business, others are due to public indifference. While we may scoff at some as being imaginary, the fact remains that the effect of belief in imaginary drawbacks may be just as detrimental as if these drawbacks were real.

In the Douglas fir belt I would list the actual drawbacks to forest

growing in the following order: fire, insects and disease, system of taxation in effect, uncertainty as to future values, length of time required to grow a crop, inability to readily realize on a forest investment, attention required to manage a forest property, and finally, probable low interest return from such an investment.

Some one of the above or a combination of several of them, may account for the lack of desire on the part of a land owner to attempt other than realizing as soon as possible on his main investment, the merchantable timber, trusting that some one else, perhaps State or Federal government, will eventually secure his logged-off land, and use it as conditions warrant.

Fire. Mr. Munger, in his excellent treatise, "Timber Growing and Logging Practice in the Douglas Fir Region," calls attention to the fact that in the Oregon and Washington fir belt, timber is annually removed from some 205,000 acres, while the average area of deforested land burned over for the period 1918-1925, was approximately the same as that from which timber was removed. This is not as discouraging a statement as might appear to be the case, but it is bad enough. We know that many areas burn over several times, and that many have never burned since logging, or following purposeful burning to partially remove the fire hazard. It is true, however, that largely due to repeated fires the stocking of cut-over areas in the Douglas fir belt is not what it should be by a very wide margin. And it is true that practical security from fire on reforesting lands cannot be guaranteed even through the practice of the most intensive protection measures. This will again be mentioned in discussing what should be done to remedy the situation. I do, however, desire to state that so far as it has been possible to ascertain, timber owners in the Douglas fir region are surpassed by those of no other section in the effort put forth to prevent fire and in their expenditure of funds to this end. Fire fighting in cut-over areas requires rare judgment, for it is easily possible to expend vast sums in attempting to stop fires where chance of success is very remote.

Taxation systems. In both Washington and Oregon, forests and forest lands are taxed like all other property under the general property system. This fact, many people consider on a par with fire as a drawback to forest practice. Except in a limited way, attempt has not been made separately to tax young forest crops, but this is simply because they are not considered to have value. Whenever value at-

taches to this class of property, it will doubtless be reached by the assessor if our present system prevails.

Personally, however, I am very optimistic that the next few years will see more modern laws in effect, but in the meantime, deforested areas are bearing a burden which together with fire protection charges, is very likely to result in added abandonment of property unless a change is shortly forthcoming.

Other drawbacks. The other drawbacks listed are perhaps less tangible than those of fire and taxation, but are often advanced as reasons why forest growing should perhaps largely devolve upon the State or Federal government. Some of them are particularly applicable to certain classes of ownership. For example, the company with a long cut assured and desiring to stay in the business indefinitely, may feel that to insure permanence, they can best keep their lands productive and that possession of young timber stands of varying ages adds to the value of the whole operation in sufficient amount to justify the added expense involved. Again, the management of such properties in connection with a going concern is less expensive. But in the case of perhaps the majority of operating stumpage owners in the Douglas fir region, a situation such as the above does not prevail. In many instances, operators have only a limited cut in sight. Perhaps already the bulk of an operator's land has been cut over and unless by reason of location he is able to secure more timber, under favorable terms, he faces a long wait before a new crop will be available on his holdings. Then many of the obstacles above mentioned become very real.

When the time arrives that there is demand at a fair price for young timber stands, this situation will again change but probably few present day operators can visualize such a happy condition of affairs.

Suggested Remedies. While the foregoing may not indicate an over satisfactory condition so far as practice of forestry is concerned in the Douglas fir region, I am of the opinion that, in spite of drawbacks, real or fancied, the region is forging ahead as satisfactorily as are most other sections of the country. For one thing, it is a comparatively new region, with a large amount of cheap stumpage still available. Even wise people seldom think of a shortage of food when the granaries are full, and particularly if the demand for grain is slack and the price soft. But here in the Douglas fir belt, I feel that the industry and the public are not unmindful of the desirability and need for perpetuating a great lumber industry, and anyone who has

followed the development of the past 20 years should feel distinctly hopeful for the future. It has been some years since we have witnessed any considerable destruction of mature timber by fire. Fires on deforested areas are no longer regarded lightly. A fair but not sufficient area of our cut-over land has restocked or is restocking, and such land is not to any considerable extent being abandoned by its owners. They are not only paying taxes on these lands but paying for fire protection, as well. A considerable number of owners are attempting in a systematic way to work out a plan of management for their properties which involves holding them for future timber supplies, a few are working toward sustained yield for their operations and a few are not relying upon natural re-stocking of cut-over areas but are resorting to planting, both to insure a fully stocked stand and the control of its composition. In addition to the fire protection effort put forth to safeguard logging operations and at the entire expense of operators, some stumpage owners are supplementing the work of the patrol organizations in an endeavor to prevent occurrence of fires on their properties. Consequently, I feel that, while some other regions may claim a greater number of companies practicing what may be termed intensive forest management, there are few, if any, others where so many really desirable practices are so universally in effect, giving promise of at least some results over a large scope of country.

Remedies which, in my opinion, will increase interest in forest growing in the Douglas fir region and help dispel uncertainty are:

1. Further refinement of our fire protective system in all of its phases. This embraces leaving of logged-off land in better condition through falling of snags, greater care in slash disposal and better preparation for such burning. More thought to the question of future protection and re-seeding in planning logging operations.

To bring this about requires continuation and expansion of the work of our Forest Experiment Stations, Weather Bureau Service and educational effort among timber owners to point out the advantages of new methods proposed. Improvement will be most rapid if it can be shown that it will pay.

Protective organizations and State Departments can doubtless add to their efficiency through constant effort looking to betterment of organization, improvement in lines of communication, more rigid law enforcement and greater educational effort among operators and public. Cut-over areas from a fire protective standpoint require particu-

lar attention. There is room for much improvement without added expense, but certain improvements will mean added expense which must be justified by results. And this seems to be the place to add that public expenditure must be stepped up to match private outlay for fire protection.

2. Our tax laws must be revised so that forest crops are on a parity with other products of the soil. While it is not claimed that this alone will bring about universal interest in forest growing, it is believed it will indicate public understanding of the subject and stimulate activity on the part of many land owners. At least, it will go far toward preventing the abandonment of forest property by its owners.

3. While working toward greater security as regards fire and adjustment of our taxation system, the advantages of keeping forest land productive, if retained at all, and advantages of operating on a sustained yield basis or an approach to this, where feasible, should be presented to forest land owners at every opportunity. This presupposes again that in such presentations the results of careful investigative work will be available.

4. Every agency in any way connected with the forest industry and especially members of this Society, may well champion the use of wood wherever it will serve as well or better than other materials. Some of our most vexing problems will be materially aided by closer utilization and a stabilized market for lumber. On the other hand, loss of markets to other less desirable materials and failure of the lumber industry to prosper can only result in failure of this industry to take the desired interest in its perpetuation. To my mind, this Society could do nothing more worth-while than vigorously and in a scientific manner to champion the use of wood where it serves as well or better than its many substitutes.

5. Our States may well set a good example through systematic management of state-owned land, and show faith in the possibilities of growing forest crops by adding to their holdings while land is readily available for a very reasonable expenditure. There are many areas which one cannot expect the owners to retain, and where advantageously located, these may well be acquired for state forests. Similar action might quite properly be taken by some cities and towns, particularly where forest growing and watershed protection may be combined to advantage.

6. Since public co-operation is essential to a satisfactory forest policy for any state or region, it would seem to be at least in part, the province of foresters to aid in securing public understanding of the forest problem in order that questions of public policy may be dealt with fairly and intelligently.

Land owners cannot be compelled to follow good forest practice, neither can the public be compelled to accord such owners fair treatment in matters of taxation, fire protection and things of this kind. Presumably, if left to run its course, the time would come when forest growing would be undertaken in the very nature of things, and because it was evidently a profitable and useful means of utilizing certain parts of the earth's surface.

It is desirable, however, to avoid the consequences of letting the project work out its own salvation, and we are attempting to show that it is good business to start new forests at this time to replace those which will be removed in the next forty or fifty years. This being the case, our Government and States are fully justified in giving liberal scientific and fiscal assistance to the forest land owner, while those in the profession have a real duty imposed upon them to overcome the present day obstacles in the path of good forest practice and encourage the best management of timber lands which economic conditions permit.

COMMENTS

BY FRED AMES

Assistant District Forester

Chapman is not, I think, overstating the facts when he says there has been appreciable progress in forestry in the Douglas fir region within recent years. Considerable thought is being given by timber owners and operators to forest management as such. A few progressive operators have had their properties examined by consulting foresters and two companies that I know of may at least be said to have made a beginning toward continuous cutting. Three companies are employing foresters for technical forestry work. When, however, we analyze what we think of as progress in forestry we find, I believe, that 95 per cent of the actual, tangible accomplishment lies along the line of fire protection. There the advancement is real. More than that, it is outstanding, and incidentally much credit for it is due to two foresters here at this conference. It is problematical how much of this progress, so far as the private owner is concerned, had its inspiration in the desire for the perpetuation of the forest and how much was more nearly related to self protection and insurance. The result is the same in either case and this result means progress in forestry on account of the great part which fire protection plays in forest management in this region.

Aside from fire protection, I confess that under present conditions, I find it a little difficult to be very optimistic over what can be expected in the way of forest management by the private owner and to my mind the various reasons advanced as obstacles all simmer down to one—the private owner cannot at the present time see his way clear to get a profitable return on expenditures made for that purpose. No fair-minded man expects the private owner to undertake the practice of forestry for any other reason. The lumberman cannot be expected to be any more idealistic in the way of sacrificing present profits for the benefit of posterity than any other business man.

Under no condition would an operator attempt to manage his property for forest production unless he had one of two things in mind—either holding his land until the young growth has acquired a commercial value, or management on a sustained yield basis. As

Chapman has said, a good many owners are holding their cut-over land, but the real reason for that is very seldom either one of the above. It is usually because there is no profitable way of disposing of it or the owner gains nothing in the way of taxes by selling or allowing it to revert to the counties. The protection given cut-over land is, to a large extent, insurance on standing timber and equipment. It is only very recently that there has been any sort of fire-consciousness in relation to cut-over lands and, as Chapman has said, the average reproductive conditions on such land are far from satisfactory.

The reasons why the average lumberman is not thinking in terms of sustained yield are not hard to appreciate. For even an average sized operation to be managed on a sustained yield basis a very considerable acreage is necessary, say fifty to one hundred thousand acres. Figures compiled by the Office of Products in 1926, show that there were only five timber holders or operators in western Washington owning fifty thousand acres or more and about twice as many in Oregon. As pointed out by Chapman, a great many companies can see the end of their operations right now. A very recent compilation by a firm of forest engineers in Seattle shows that on the basis of the 1926 cut there are only seventeen years of logging left on the privately-owned timber lands of western Washington. This estimate is based, I understand, on large bodies of old-growth timber and takes no account of small scattered tracts or of the influence of second-growth on a continuation of the cut. The experience of the South, during the past few years, may be expected to repeat itself in this region.

Most operators are so heavily oppressed now by interest and taxes that the building up of the timber reserve necessary for a continuous cut, is out of the question. There has been a very small increase in stumpage values in fifteen years. I heard it estimated at 25 per cent on holding-stumpage by a man who should be an authority. On the average, the operating profit has also been small. During the past few years, many an operator has been writing his profits in red ink in five and six figures. To my mind, under these conditions, the chance of any appreciable movement toward the building up of manageable forest properties is remote. You can't talk very convincingly of the perpetuation of a regional industry when perhaps 60 per cent of it is losing money.

All this does not mean that the practice of forestry by the private owner will not come about eventually. Chapman has pointed out

what will help bring it about. As I see it, when the industry approaches its rightful prosperity, forestry will follow. Conversely, it is conceivable that it may get so much worse than it now is that it will be forced into strong hands which will be more apt to look upon sustained operation as feasible.

Forestry will be practiced when it pays.

INDUSTRIAL FORESTRY IN THE WHITE PINE REGION OF NORTHERN IDAHO; ITS PROGRESS AND DIFFICULTIES*

BY C. L. BILLINGS

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The difficulties are formidable, but progress is being made in spite of them. The progress already made is material and there is an element in the lumber industry in northern Idaho which is sincerely sympathetic to forestry and constructively interested in further progress, and so it is my intention to try to emphasize progress in this paper. Perhaps this can be done best by sketching the difficulties first and reciting the progress afterward.

Difficulties

Taxes, Protection Cost, Losses. These are listed first because of the place they have heretofore occupied in discussions of possibilities of industrial forestry—not because I feel that they are the most important difficulties encountered in northern Idaho.

Taxes are high—dangerously so. They will be higher before they are lower. But if the people of Idaho want timber grown in our State by private enterprise, taxes will not be prohibitive.

Protection costs are high, possibly the highest in the United States. With Blister Rust on the doorstep, protection costs, too, will be higher. There seems to be small reason to expect that they will ever be lower, but even so, they are not out of line with similar burdens borne by other industries.

Losses from fire will be in a diminishing ratio, except for occasional flare-ups. Losses from Blister Rust are an unknown and disturbing factor to be reckoned with, but the writer believes, not too confidently, however, that the total predictable loss ratio will not be too high to be endured.

High Cost of Logging Improvements. Speaking broadly, when a piece of timber land has been opened up and made ready for the sawyers and the skidding teams, the cost per thousand feet of constructing the improvements goes up or down with any manipulation of the total

* Presented before the Society of American Foresters, San Francisco, 1927.

number of thousand feet available to the improvements. If the conservative cutting reduces the amount available by leaving part of the timber standing, the cost is increased on the timber removed. Of course, this is a principle which holds everywhere. It is mentioned because it is most irksome in regions where the cost of the improvements is high in relation to the density of the stand—as in northern Idaho.

Whether there are operating and realization advantages in conservative cutting which offset this, has not been determined. The matter is being studied by a few.

Land Ownership and State and Federal Timber Sale Policy. A decision, by an industrial concern, to undertake the practice of forest management must be based primarily and fundamentally upon the ability of the concern to secure its raw material year in and year out on an orderly and established plan. It is not conceivable to me, that any northern Idaho operator could choose to continue to operate for the next period of years until available merchantable timber was exhausted, then shut down for a period of years while his timber was growing and then start up again. It is fundamental that the operator must be assured of an uninterrupted flow of logs to his plant.

The operator in making his analysis of uninterrupted supply would have several sources to consider:

1. Timberlands owned by his company—the company either does or does not own forest land enough upon which to grow timber enough to meet his annual needs.

2. Other forest land owned privately—the company either has or has not the opportunity to augment its holdings of forest land by purchase of desirable land from others.

3. Possibility of purchase of product of other lands under forest management—practically, this means the possibility of purchasing State owned and National Forest timber at the time it is needed to fill in gaps in the operator's own plan.

The first of these sources of supply is open to only two or three, or perhaps four of the companies in northern Idaho. The rest of the companies simply do not own enough land to produce a sustained volume large enough to justify an operation.

The second of these sources is naturally not a promising one. The process of consolidation of timberlands has been under way for over twenty-five years, the available privately owned land has been

thoroughly picked over and no substantial amount remains which has a stand of merchantable timber of sufficient importance to be used to piece out the present life of many operators. This is also true of second growth, near maturity. There is, however, a considerable amount of privately owned land well stock with young growth forty years old and younger.

The third source of supply is a very important one in northern Idaho. The State-owned lands are well handled, not only from the standpoint of protection, but from the standpoints of silviculture and management, as well. The State ownership is made up of isolated forties here, and solid townships there, with all gradations of blocking in between. Some of the State timber, from the rough character of the country in which it is located, can and will "come out" only when the locality is opened up for the adjoining private timber. Other State timber, well blocked and accessibly located, may be sold at any time to anyone willing to pay for it. This part of the State's land can not be assigned a definite place in any operator's program.

What has been said of State land, applies with greater emphasis, to National Forest land. This is said for the reason that while the isolated pieces of National Forest land will "come out" just as the isolated pieces of State land—that is, when the adjoining private timber is cut, the larger units of National Forest timber are of much more relative importance than the larger units of State timber. Perhaps the United States Forest Service does not realize the need, but at any rate in the present situation the Service is unable or unwilling to contribute any part of any National Forest timber to any pool which any operator may be trying to assemble to draw his cut from. It is not within the scope of this paper to comment upon the correctness of the Forest Service position. It is within the scope of this paper, however, to point out that if maintained, this policy closes the door of forest management to nearly all the operators of northern Idaho. The theorem can be stated this way, "If the operator does not own land enough, and can not buy it, to produce all the logs he needs and can not assure himself that he can cut some one's else timber and get part of his logs there, how can he practice forest management?" And the answer in the back of the book is, "He can not do it."

Overbuilt Sawmill Capacity. Not in considering the total capacity of all the sawmills in relation to all the timber in northern Idaho, but in considering the timber available to the present location of each

plant, the deduction is not escapable that forest management is an impossibility for almost all the plants. Many plants are nearly through. As each nears its end, it will become a more desperate competitor for available National Forest and State-owned timber. This means that inevitably timber which should be held back to fit into the forest management picture in each locality later on, will be cut too soon.

Age Class Gap. There is a serious deficit in forty- to eighty-year-old timber all over northern Idaho. This is the age class that should provide the cut immediately after the mature timber is gone. Without it, there is nothing to do but stretch out the timber now mature to cover the corresponding period by decreasing the present cut. This, with the present conditions in the industry, might be a very difficult thing for an operator to do.

Meagerness of Research Data. There has never been and there is not now, a really respectable amount of data available to the lumbermen of northern Idaho on the growth and yield of the timber in the region—even reliable volume tables are lacking. Lumbermen most interested have undertaken more or less haphazard investigations on their own initiative. Lately several have had the co-operation of the State University Forest School and a few have retained consulting foresters. The northern Idaho lumberman has always been willing to pay for what he wanted after he knew he wanted it—and always will be willing. If he knows he wants data on growth and yield, he will get it. But it is quite probable that forestry in northern Idaho would be much farther along today if there had been aggressive leadership from outside the industry in the research field along these and other lines. That the Forest Service has been prevented from assuming this leadership is simply too bad.

PROGRESS

Forest Protection. It is probably safe to assume that every one in this room well knows of the proud place occupied by northern Idaho in the field of forest protection. No additional bouquets are going to be passed in this paper but it is proper to say that twenty years of organized co-operative forest protection have provided among the operators a background most favorable to the consideration of the practice of forestry.

Brush Disposal. The first manifestation of this attitude came a few years ago in the better disposal of slash. A few operators undertook, without compulsion, to pile and burn their brush, securing re-

sults which were commendable. Costs varied enough to indicate that they could be controlled by experience and better technique, just as any other item of logging.

Forestry Law of 1925. In that year, comprehensive law was enacted providing among other things for the creation of a Board of Forestry, for the creation of the office of State Forester, for compulsory patrol of forest land and for the proper disposal of slash, under the direction of the State Forester. I believe compulsory patrol will prove to be an expensive and damaging boomerang, defeating the end which it seeks to serve, but the law, as a whole, is distinctly progressive and its brush disposal section a necessary step.

Leaving Mixed Timber. The cost of logging mixed timber, (larch, Douglas fir, white fir, spruce, lodgepole pine, etc.) in many drainages in northern Idaho, exceeds the value of the logs of these species at the mills. Naturally, large amounts of these species have been and are being left uncut. No consideration of forestry has influenced this policy, but it is mentioned because of the reasonable probability that this mixed timber will provide, if not the nucleus, at least an important part of a second cut on these lands.

First Steps in Conservative Cutting. One company is now cutting to a diameter limit in its everyday logging. Because of the large scale of its operation it has attracted considerable publicity, accurate and otherwise, by this practice. This company is feeling its way. It has adopted an arbitrary diameter limit as a more or less rigid guide for use while foresters are investigating the property and studying conditions to determine what better system of cutting might be used. It has adopted, at this time, no policy of forest management which it will be expensive to discard in later years if such action is necessary. But it is practicing now an elementary sort of forestry, in perhaps a crude manner, but believes that this sort of forestry is paying its way, and will pay its way, as it goes along.

Forest Management. Several of the larger companies are having management studies made by private foresters. The blunt fact is not always remembered, that timber lands once cut over, can not immediately be discarded like old shoes. There is an obligation and necessity to retain ownership of these lands, at least until the end of the operation. It follows that a large land owning lumber company must practice some sort of forest management. It can not escape. The question is whether the management is good or bad.

COMMENTS

By F. G. MILLER

Dean, School of Forestry, University of Idaho

At the annual meeting of this organization three years ago, not a little adverse opinion was expressed toward commercial forestry in northern Idaho. Today a practical operator in that region tells us that commercial forestry is already a fact. He relates that obstacles are formidable, but not insurmountable. That this subject is given a place on this program would indicate that our program committee believes commercial forestry in northern Idaho has arrived.

There has been a change in the attitude of the operators themselves toward this question. Three years ago, probably not a single operator would have thought of budgeting an item for a management plan. Now, we are told that several large companies are employing foresters to make management plan studies which will help them to determine to what degree they can employ forestry measures in their operations, and these companies control a large part of privately owned white pine acreage in Idaho.

And, may I add, that it is not foresters who have furnished all of the leadership in forest progress in Idaho. Five or six years ago, foresters drew up a well-thought-out set of regulations to govern the disposal of slashings in privately controlled white pine holdings, and before they could be put in print, the operators helped to pass a state wide forest law, which went the limit in slash disposal requirements. The original report has just been published, revised to conform to these legal requirements.

As Mr. Billings' paper states, one large company has made a crude start in the practice of forestry. It is cutting to a rough diameter limit of twelve inches, and piling and burning the slash. It is now cutting in second growth, eighty to one hundred years old and leaving on the average acre a residual stand of approximately 100 trees per acre. This year is the second season's cut following this plan. Owing to weather and personnel difficulties among the field force, the results of the first season's efforts at slash disposal were a disappointment, and 40 per cent of the residual stand was killed. But, at that, the start is a commendable one, and better results may be expected as the work

progresses. The work of no company should be judged by one year's trial. Let it proceed for a period of five to ten years, then its performance may be fairly evaluated.

The Fire Hazard. The paper mentions the fire hazard as one of the obstacles to commercial forestry, but rightly adds that losses from fire are diminishing. Tremendous progress in abating this risk has been made in the last half dozen years, and now the Idaho law is playing an increasing part in this progress, mainly through two of its essential features—slash disposal and compulsory patrol.

Slash Disposal. The law requires that slash shall be piled and burned unless another method is authorized by the State Forester. Progress under this section has been slow, at times discouragingly so, but nevertheless there has been distinct progress, and more rapid improvement is confidently expected from now on. Few, if any, operators longer believe broadcast burning of slash to be efficient, even as a fire prevention measure, and this of itself is a long step forward. Not only is the piling and burning of slash recognized as a necessary fire prevention measure, but it is now known that the cost need not be prohibitive. This feature of the law is growing in favor and it is not believed that a further formidable fight will be made on it.

Compulsory Patrol. It is regretted that Mr. Billings does not state his reasons for opposing the compulsory patrol feature of the Idaho law, especially since his opinions are always to be respected. To my mind, compulsory patrol is a very essential feature of the law, and is largely responsible for the increased protection which Idaho timber lands are now getting.

Before it became a law, all protection was purely voluntary. Much of the state received no organized protection at all. Within the organized districts, the paying members were protecting fifty per cent more area than they owned, and the membership acreage had been shrinking for some years before the present law was passed. Now all timber land in the state is under organized protection, and every owner of forest land must provide adequate protection for it.

This is the feature of the law that has been the most unpopular, but opposition to it is now on the wane, the protests against the payment of assessments being decidedly less this year than formerly.

On the whole, the law seems to be more strongly entrenched than at any time before, and is a definite factor in forestry progress both on State and private holdings.

Forest Taxation. Supplementary to this forestry law, legislation should be enacted which will protect forestry against confiscatory taxes. The tax burden on cut-over lands is not excessive at present, but the danger is that it may become so before the second crop matures. Remedial tax legislation on cut-over lands that are being held for a second cut will probably be attempted at an early date. A campaign of education to inform the people as to the reasons for such legislation will be necessary, but once misunderstandings are cleared away, it is believed that their reaction will be favorable.

Blister Rust. The blister rust invasion will, of course, mean a hard fight, but the fight may not be wholly without compensating factors, as experts now believe that there is a close relation between blister rust control and forest management, in that control is made easier, following logging where a part of the stand is left, than after clean cutting, since shade retards the reproduction of ribes. This would argue for the leaving of residual stands, and for selective logging. Methods of logging, which will disturb the soil the least are also favored.

Research. The need of forest research as an aid to commercial forestry is generally recognized, and the field is large enough to occupy the time of all research agencies. It is admitted that research data are meager. The Idaho School of Forestry has done its bit, and plans are now underway by which it is hoped that the school may speed up its research program. It is the hope that outside agencies may still further increase their activities to this end.

State Forestry. Though not entirely germane to the subject, I should like to add just a word relative to forestry practice by the State of Idaho. The State's timber is being sold conservatively, for in every contract during the past ten years it is stipulated that no white pine or yellow pine below fourteen inches shall be cut nor cedar poles below twelve inches. All slash shall be piled and burned even though the land is agricultural in character. A price is put on the mixed species, but the purchaser is given the option to take it or leave it.

Thus it is that the State is handling her timber lands with a view to keeping them continuously in timber, and now with private forestry on the way, Idaho is able to give a favorable accounting in the matter of commercial forestry.

COMMENTS

BY ELMERS KOCH

Assistant District Forester

I am sorry that Mr. Billings was unable to be here himself to present his ideas on this subject. Mr. Billings represents the company owning probably the largest body of white pine in the world and it is very encouraging that they are seriously considering the practice of forestry. Mr. Billings, however, in his paper bases his conclusions largely on the assumption that forest management and sustained yield are practically one and the same thing and without sustained yield there would be no forest management. It is quite true, as Mr. Billings stated, that there are only three or four lumber companies in northern Idaho that either hold sufficient timber lands in their own ownership or will be able to acquire sufficient timber lands to practice sustained yield. It is true that a large number of mills in northern Idaho have not more than ten or fifteen years' cut in sight. And, consequently, quite a large number of mills will inevitably go out of business within the next ten or fifteen years. But, in spite of this fact, I do not for one minute believe that some form of forestry in the sense of growing timber will not be practiced on these lands in small ownership. The land is there; in a great many cases the second growth is there, and, while we cannot foresee just what will be the future of the lands, whether they will remain in private ownership or go into county, state, or federal ownership, there is no doubt in my mind whatever that a large percentage of timber land will continue to produce timber. Forestry will be practiced on these lands. There are two important elements that are working towards forestry in Idaho, both of them moving without any conscious action on the part of man, (1) price increment and (2) volume increment on young stands. At the present time lumbermen are not making full use of the first element—price increment. The timber is a mixture of pine and Douglas fir, white fir, hemlock and other less valuable species. It is true that a greater part of mixed species show minus value. They not only produce no profit in logging but they produce a loss. I feel satisfied that a good many of the Idaho lumbermen will change their method of cutting and leave most of these mixed species for an increase in value. That movement will have a

great deal to do with the development of forestry on Idaho lands. The other big element is the tremendous areas of promising young growth which now exist in Idaho. In spite of the fact that many of the white pine lands have been burned until nothing else but devastation describes the condition, there is a tremendous acreage of promising young growth from ten to forty years of age, and I feel satisfied that upon this young growth the future forestry of Idaho will be based. I am convinced that a large part will be held in private ownership. It is a curious thing that land ownership apparently will not always work out on what seems to be direct lines of profit and loss. The holding of timber land would perhaps work out a great deal the same way as agricultural land. There is a tremendous amount of agricultural land cleared and put under cultivation which cost much more to clear than the land is worth. I believe that a great deal of cutover timberland will be held in the same way whether the books show that it pays or not. A good deal of this stuff will perhaps be held for fifteen or twenty years longer without any very logical reason. Then values will begin to go up. The owners of the lands will see second growth values fairly in sight and from that time on forestry will more or less take care of itself.

HOW NATIONAL FOREST ADMINISTRATIVE POLICY AFFECTS INDUSTRIAL FORESTRY*

By E. T. ALLEN

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Industrial forestry may be affected by administration of other federal lands than National Forests, or by administration of state lands; or by administrative policy of state or government aside from the land-owning functioning of either. It is difficult and not wholly logical to discuss the relation of National Forest policy only, as the subject is assigned to me. Probably timber disposal was mostly in mind.

There are some universal requirements of public timber sale policy, if it shall best promote industrial forestry considered as a whole, but there are likely to be as many other requirements that are not universal, but are indeed extremely inconsistent, if it is to satisfy the demands of individual industrial units varying widely in character, aim and situation.

Nobody can reconcile these. It is possible only to seek the maximum good in the main and to deal with exceptions and inconsistencies on their individual merits.

A few economic facts stand out. The great problem of private forest growing is to bridge the gap between the old forest and the new. We often hear this of the community's need or of the consumer's need, but it is equally true of the forest grower's need. Two things he should have: (a) reasonable promise of profit from the crop, and (b) current earnings to carry the project. He may dispense with the first and be out of luck later, but he cannot dispense with the second. Forest land will be kept productive in largest measure where and when there is available timber supply for an industry that can pay the costs involved.

In general, then, although there may be exceptions, public timber may be made to serve twice; once through being utilized itself and once through bridging private industry over its most difficult reforestation period. The last way may often be much the most important

* Presented at the Society of American Foresters' Meeting, San Francisco, 1927.

contribution to the nation or the community. Also, in general, it means deferred disposal, because private industry in bulk has not reached the stage requiring the material for the purpose described. Which is in line again with the principles of financial maturity involved.

We can be led far astray by the theory that timber, over-mature in years or through disease should always be cut and replaced by a new stand. For example its financial maturity may await better market for the grades it contains. Sometimes diseased and dying trees are making the fastest relative value increase for this reason and are more worth holding than higher grade trees now marketable.

For a somewhat similar reason, I am opposed to the idea of "sanitizing" or improving the National Forests by forcing, through timber sale contracts, the fullest present utilization of species not welcomed by the market, such as white fir. Or likewise, the forcing by private operators of their low grade stuff on the market for the sake of operating economy, to such a degree that prices break. Whereas, on the other hand, holding back such species and grades promises both sides better returns and closer use.

But aside from this, public timber is usually less financially mature than private timber just because it costs less to carry and therefore can wait longer for general stumpage value increase. Indeed it is an axiomatic fact, because private carrying costs are higher, that if stumpage values should continue to increase, public timber cannot possibly be financially mature as an investment for the people who own it until long after profit in private timber has disappeared.

Although there is considerable second growth of both even-aged and selection types and of all ages, it is probably true that in the West there never has been and never again will be so large an area as we now have of land on which a new crop is just beginning to establish itself. Heavier future cutting will hardly create a temporarily unstocked area greater than the accumulation of reburned land now being brought under protection. Industrial forestry should never, it would seem, meet another period quite as difficult to survive as this interval between operations in virgin timber and operations that are possible on an equally big scale in second growth.

Almost every tendency is toward making the bridging of the gap difficult for the industry; to force it into liquidation of its timber holdings with consequent over-production and loss. There is no panacea for this, nor does it present the same picture to the individual indus-

trial units differing greatly in character, aim and situation. Some have too much timber, some too little. We may expect to see many concerns independently keeping their lands productive. Their number, the intensiveness of their effort, and its permanence, are dependent mainly on reduction of obstacles other than shortage of operating timber. But with these I am not concerned for the moment. Returning to the problem of bridging the gap on a scale adequate to prevent much community distress and large permanent loss of land productivity, I am more than ever convinced of the soundness of the position I firmly took fifteen years ago—that this should be the paramount aim of public timber policy, whether State or Federal. As I stated it before the 1913 Conservation Congress in Washington, D.C., “the maximum cut from national forests should be assured, not during the existing period of stored and excessive virgin supply, or during that permanent future which will begin when adequate forest crops have had time to mature, but during the closing years of an intervening transition period.”

Bear in mind that this need of public reserve may be local, individual and variable as to time. It will occur whenever any considerable area that should stay under private management, cannot stay there without public timber to keep the management effective. Many public sales are now necessary for this purpose, although more often based on economy of operating mature timber. We are at the verge, I believe, of more consideration of saving large areas from abandonment and lessened productivity and, in this connection, of a quite new concept of public administrative responsibility. In the past this has been quite largely an ownership responsibility concerning the State or Federal Forest itself. For example, on such a basis a unit like a National Forest may seek to attain a cut representing sustained yield, or seek certain earnings, or otherwise weigh considerations chiefly affecting itself, or an applicant operator, or some community situation involving a closely identified local administrative responsibility. Such a property stewardship may be entirely too narrow in view to serve the highest ultimate purpose when the whole state or nation is considered.

To illustrate, conceive a large public timber supply lying between two nearly exhausted large regions of private operation which are threatened with all the evils of exhaustion, so that a tremendous acreage may fail to bridge the gap. Both want to push into the public supply rapidly. Newcomers apply for a sale in the middle, between them. Consideration of only administering the public area might admit

all three and result, in twenty years, in a theoretically correct sustained yield basis for the public area, but disaster for the neighboring areas. I would say that these should be provided for by reserving the supply for them in their time of need and that hardly any other consideration could weigh against this in public utility.

There are now certain conditions restricting National Forest timber sales, some measuring the need by a yardstick of forest industrial economy while others recognize local community development. I greatly question the application of the latter when over-production seems likely to make every such new development occur at the expense of a community development which is already a reality and in danger. The country needs no increase of mill capacity. As a broad rule, though there may be exceptions, there are two classes of applicants who seldom if ever represent real need for public timber, whether or not they want it: (a) new operators, without lands of their own, (b) operators so near through with their own land that they will not keep going long anyway.

I don't mean that there never can be a legitimate public timber operation only, but rather that sales should not be made merely for revenue, or to start anyone in business, or to enable him to abandon his old operation entirely, or even to condition a forest unit, if there is good reason to believe the timber may sometime be used more constructively in keeping productive some private land already cut or sure to be cut.

This theory needs also a new concept in application to make it get results. It cannot depend entirely on auctioning timber to the highest bidder. It must consider the bridging needs of individuals in differing stages of exhaustion, as well as needs of the region. It may require conditions and safeguards to compel purchasers to go through with the program. It may require mergers and allotment systems to unite holders of long and short private supplies in a dependable program. It may place those who will co-operate, on a sort of public utility basis and promise them protection of supply against competition for the timber. It may involve considerable exchange of cutover land to public ownership and between private owners, to accomplish suitable blocking and management. But these are not insurmountable details if there is sufficient acceptance of the principle that industrial forestry on a large scale requires continuous earnings, that a very considerable proportion of privately-owned land does not promise this,

that public timber can be made to furnish it at the time of need to a very considerable extent, if this timber is not dissipated by a less far-sighted policy.

Should such acceptance be sufficiently general, obviously it would have a strong tendency to accomplish tax reform to make private virgin timber last as long as possible, and to encourage the growing of new crops, for the public would feel more assurance of success in getting desired results. The subjects are closely related.

At best, industrial reforestation calls for the shortest possible rotation. Probably nothing will be more encouraging than the evidence we may soon expect that pulp commodities will go far toward supplanting sawed lumber as the product of reforested land. The extent and rapidity of such outlet are not accurately predictable, but we can say as a rough rule that private forestry will be encouraged by prospects of the greater short-rotation market to come, if public forestry competes less in this field and undertakes more to grow the long-rotation material. This subject ramifies into great detail, including suitability of species, but the thought for guidance of policy remains.

I have purposely not gone into detail of timber sale methods, working circles, management plans, etc., because they involve infinite variation and emphasis on one situation might be construed as disregarding another. The same is true of co-operative relationships outside the matter of timber disposal. About all I can do is assert a few principles, illustrate a few of them, admit that exceptions must be made, and try to bring out that public forest management necessarily affects private management and consequently, if it aims at general public welfare as well as hard-boiled stewardship of given public lands, should always seek stable conditions for the wisest use and perpetuation of all the country's forest resources.

Even without regard to reforestation, this counsels against timber disposal to add to the pressure for unprofitable liquidation now, to result in shortage later. It counsels against cutting, to improve the character of the forest, classes of material that are not wanted now but will be wanted later. It counsels every preparation to meet the need for forest activity when forest supplies will be lowest and communities in most distress, and this need will not be uniform with localities but vary with the speed of their exhaustion. Consequently public policy should be to study the local trends and aim mainly to postpone

exhaustion as long as possible and to help bridge it then by ability to supply timber both for the consumer's need and to provide private forest-growing enterprise with the means of carrying on during its hardest strain. Otherwise too much land will be badly cared for and revert in poor condition to a public which is also financially distressed and unable to care for it. Such a concept may very radically alter sales policy from a basis of competitive exploitation, rather paternally caring for the weakling, to purposeful discrimination to encourage such private enterprise as is most responsive and capable of organization to assure the desired result.

Government or state should never market public timber for a price below the cost to private owners of growing a similar crop. To do so would not only discourage such effort but be bad fiscal policy for the owning public.

It is impossible to predict the extent of exchange of private land into National Forest ownership. We only know that the present situation is badly confused. Many lumbermen who are pessimistic regarding retaining cutover land and now like to look forward to exchange are likely to change their views and prefer to keep the land if the outcome looks hopeful. But present federal policy gives them small encouragement to put the land in the condition which will best meet either alternative and, as we might otherwise expect, result in much retention and industrial forestry when its promise is better realized. Briefly this federal policy is to allow only such market value as existing community viewpoint fixes, which obviously reckons little with expectation forest values or expenditure to enhance them. The argument is that Congress expects sharp trading, disregarding such expectation values or expenditure if possible.

Hence we may have a situation where a company should spend say \$4 or \$5 an acre to leave its land in good forest condition, and keep up adequate protection at considerable annual cost; is offered \$3 an acre for it by grazing purchasers without such expenditure being made; and is offered only \$2 by the government in exchange if it does make the expenditure, provided the government can get similar land for \$2. To dispose of the land for grazing nets \$3; to devote it to forestry actually loses \$2 or \$3, taking the government's offer as a basis of its worth for the purpose, since the government has no taxes to reckon in so fixing its worth.

It seems obvious that this policy does not encourage good forest management, also that grazing or any other current local valuation is no measure of forest producing value. The Government, to be a good trader, is in the position of concealing such value if it can, instead of assisting and encouraging the owner to determine and improve it.

We seldom hear of the government furnishing him with its growth and yield tables that show his promise in the land. We do hear of its making low offers to owners about frozen out of the region anyway, and quoting acceptances to establish values. This policy may be consistent with good National Forest business, but is undebatably inconsistent with encouraging industrial forestry. If it is true that Congress demands it, the Forest Service should educate Congress instead of capitalizing its trading ability.

COMMENTS

BY PROFESSOR BURT P. KIRKLAND

University of Washington

I believe we are in general agreement with Mr. Allen's thesis. The Government is better able to carry timber reserves than the individual. However, I think there is some doubt whether any lumber companies which have the capital in their forests now and which do not conserve that capital and continue it in the forests will later attempt to rebuild by the growing of young stands and the creating of new capital to work with. On the other hand, I think the Forest Service is practicing sufficient self-denial in its timber sale policy, inasmuch as the cut from the National Forests does not exceed one-fifth of the possible sustained yield cut from the forests. We have got to bear in mind that the operations of National Forests still nets a loss and that if the Forest Service does not cut at all the National Government will be deprived of revenue and so will the states, which get 25 per cent directly from the revenue and other percentages directed to local improvements. On the other hand, all the cutting of private timber is cutting down revenues because as soon as the timber is cut the revenues from taxation cease. In contrast with the cutting situation of the National Forests, the western private owners are cutting, I believe, approximately the sustained yield limit of their lands but they are not cutting in a way to obtain sustained yield. They are cutting it in a way to liquidate their assets. They are cutting all in large bodies—some timber being entirely liquidated, while in other places no cutting is taking place. The desire on the part of the industry is not only to take the sustained yield cut but to liquidate its capital assets. And I think that that is the fundamental difficulty with the industry at his time. I agree with Mr. Mason in that respect. We have a lumber market, which, as I said, when we consider that the Pacific Coast as a whole (including British Columbia) is taking what I believe is approximately the sustained yield from the private forest land if they were operated on a sustained yield basis. But the industry is trying to increase that cut and trying to liquidate its assets—to market its capital as well as its yield, and the result?—Destructive competition in the market which makes adequate return absolutely impossible! Therefore, speak-

ing in a general way, it seems to me that sustained yield is the only solution, inasmuch as it would change the policy of the industry without, as you might say, changing the marketing problem of the industry. From one of trying to dispose in ten to twenty years of six or eight hundred billion feet of standing timber, they would change it to a policy of trying to market the sustained yield—which is approximately the market absorption from the west.

Now, when the government, through the Forest Service, starts to extend aid to the lumber industry in solving its problems, I do not think it will ever extend aid for the mere purpose of enabling the lumber industry to cash in its capital assets at a good price. Whenever any aid is extended, it will be for the purpose of securing continued production of the resources—the particular resources that the Government is working with. Dean Graves mentioned yesterday, the bituminous coal lands, oil lands, and the forest, and the situation is just the same. The Government will not extend aid in any of these cases to increase the price of the product. The fundamental thing will have to be agreed to first. Conservation of resources to make them last as long as possible. In case of coal and oil lands, they are exhaustible resources and can be prolonged only for a certain time. In the case of the forests, a similar program means perpetual yield from the resources.

To come back to the problem of the Forest Service particularly! I think we have been talking generalities on this subject for about twenty years or so. The time is now here for us to take these principles right into the woods. In that I agree with Mr. Mason's program of co-operation by productive units between the Forest Service and the private owners. I think that in the State of Washington, very close to two-thirds of the remaining privately owned standing timber is adjacent to the National Forests and belongs in the same productive units that the National Forest timber belongs to. I think that by taking its ideas into the woods, the Forest Service can be of very material assistance in cutting the private lands on a sustained yield basis. I, of course, have not the time to discuss very much the methods in each case. Naturally, I think the initiative might come from the Forest Service or private industry in any given area, and the method of operation would be for the Service and the private operators to agree first as to what areas shall be included in any local unit for sustained yield management. Then a co-operative plan of operating that unit of management should be prepared, based on sound lines of management of the timber in that

unit as a whole. Now, in many cases, when the selection of stands for early cuttings comes up, in such a plan, no doubt the government timber would be the timber to be held. I do not think that this should be the universal rule by any means. I do not think it would be advantageous in all cases to private owners to have that done. In fact, it would be a direct loss in many cases, for the simple reason, that probably not over 20 per cent of the remaining standing timber, as in the State of Washington, is financially mature for cutting at this time. Remaining timber is still earning returns by increasing in value, in excess of general interest earnings that industry in this country makes. It is more of a loss to private owners to cut that stand than advantageous, and if, where these stands are of that nature that they are suitable for holding, it is just as advantageous for them to hold as for the Forest Service to hold them. The selection of stands for cutting and the amount of annual cut from each area ought to go on the basic principle of leaving the trees standing that will make earnings by standing, while the necessary current revenue to be taken in the cut should be taken from stands that are no longer making satisfactory earnings. They have culminated in their earnings and are the stands that should be taken out in such operations. The Forest Service, we might consider, is working under a lower interest rate and could hold its stands more profitably than the private owners could hold them, who are working under a higher interest rate. All of these things could be done under existing law. No doubt there will be changes in administrative methods.

I think the main difficulty in taking up a program of this kind is the feeling of the profession of forestry itself. We are not ready for it. We have made some progress in the last few years. At a meeting of this Society I attended three years ago, I thought the psychological situation of the profession was absolutely hopeless. I think this meeting shows that a good deal of progress has been made. In another three to five years we will be ready to support a policy of this kind.

Now, the question is, would the private industry? It is not whether it can afford to practice forestry, but can it afford to get along without it? Forestry is a saving rather than a cost. It is the saving of resources and assets of the industry. Washington, for example, with its annual cut of eight billion feet worth about \$25,000,000 in stumpage value annually. It has taxes and other costs of about \$10,000,000 annually. Leaving net recovery of about \$15,000,000 a year perhaps of

stumpage value. If the forests are worked on sustained yield basis, that recovery of \$15,000,000 will be a return on the investment. If the forests are timber-mined, it is a depletion and not a return. If it is sustained yield there is an added return of an increase in the value of the standing timber, which investigation shows to be about ten cents per thousand per year, which would amount to another twenty-eight million—returned on standing timber.

It is a question, then, of the conservation of capital. Take the Long-Bell Lumber Company for instance—the only lumber company with stocks listed on the New York stock exchange. If it does not have forestry, what will happen? That company would have to be liquidated in the course of time and their stock would be written off. If it has forestry and continues this operation that will not be necessary. And if it does not make more than 1 per cent it will not be in a worse position than thousands of other companies—which are not making any more than that. There are now huge amounts of capital being invested at 3 to 4 per cent. I believe standing trees create an unusual investment opportunity in this country at this time, because they are able to earn as much as industrial capital is generally earning, if you look at stock market quotations at this time.

COMMENTS

By G. H. CECIL

Supervisor of Angeles National Forest

The paper just read has given us a suggestion as to how the Forest Service can help in relieving the pressure for liquidation. There is probably little new, aside from the manner of presentation. It is not new in a way, for the idea of a reserve supply of timber in the hands of the Federal Government was the primary consideration in the establishment of the so-called Forest Reserves. While the development of the West has changed the conception of a reserve shut off from all use, a Federal forest policy that failed to take into consideration our diminishing supply of virgin material and a rapidly approaching shortage of timber of any class, would fall far short of what the public has a right to expect. I may say therefore that with certain reservations, I am in accord with the idea advanced.

I cannot entirely agree with the theory that over-mature timber will increase in value because of a better market for the grades it contains. Such material is almost without exception of the highest possible grade at the present time. Any increase in its value must be in either closer utilization or in the increase in value of material contained, through the general advance in timber stumpage.

Whether such problematic increase in value will offset the certain increase of a new stand of increasing volume and quality is a question. This is true of the even-aged Douglas fir stands of the Pacific-Northwest. Virgin stands in the region run 50,000 or 60,000 board feet to the acre while many second growth stands show a volume of 100,000 to 120,000. It is equally true of our virgin pine stands where stocking is far below what may be expected of a properly managed forest. Here the best second growth show 50,000 board feet per acre as compared with an average of 25,000 for mature stands. Further, the tendency is more and more toward the utilization of smaller sizes and if, as suggested by the last speaker, we may hope for utilization as wood fibre, not only will the useable volume per acre of materials be greatly increased, but the rotation may be materially shortened and the demand for large-sized, high-class lumber will diminish.

Whether the public would be financially ahead in foregoing a certain immediate revenue, combined with the ownership of a forest, growing in volume and quality as against a forest increasing in stumpage value, alone, is also a question. Certainly, if it were not for the shortage ahead it would pay the public, from the standpoint of its own holdings, to cut them over as rapidly as a policy of sustained yield would permit.

Sometimes I am not at all sure that such policy would not insure better protection against a timber shortage than the one at present in force. A good many years ago when we began the preparation of working plans for some of our National Forest areas in Washington and Oregon, I advanced the theory that where the National Forest area under consideration would not in itself supply a sustained yield, intermingled and adjoining areas of private land, should be considered as forming part of the working-plan area. The theory was good but the handling of the private holding was too uncertain to permit much weight being given to such holdings in the development of a long time plan. We answered the problem by including within what we hoped would be the ultimate forest boundaries all such areas as were needed to round out our units of management, with hope of eventually securing such areas through exchange. The uncertainty of the management of private holdings presents the same problem today as it did at that time, some twelve or fifteen years ago.

Mr. Allen tells us that—"We are at the verge—of more consideration of the saving of large areas from abandonment and lessened productivity, and—of quite a new conception of public administration responsibility." Certain it is that the public is more awake than ever before to the need of a constructive timber policy. In California recent legislative action has exempted from taxation the growing forest crop. Several eastern states have similar statutes, while other western states may be expected to follow California's lead. I believe the public is doing and is prepared to do its share, and to foot the bill.

Mr. Allen bespeaks a public forest policy that calls for the withholding from the market of publicly-owned timber; even abandoning for the time being, the silvicultural requirements necessary for the placing of such forests on the basis of maximum production.

Can the public follow such a plan without a guarantee from the beneficiaries of such a policy that the withholding of its stumpage from the market will actually bridge the gap and not leave the end

of the bridge hanging in the air. Personally, I feel strongly that such a guarantee should have form and substance. Certainly the efforts of the public to secure even fire protection on private cut-over lands is far short of satisfactory. The public have offered and given financial assistance, although perhaps insufficient. It has, in the case of at least one state with large public holdings, exempted the growing crop from taxation. It will, I am sure, be willing to go any reasonable extent to secure timber perpetuation. But it will expect such action on the part of the industry as will insure such perpetuation.

There is only one way in which the public can be insured of such action and that is by public regulation, and I am convinced that the public will be satisfied with nothing less. It is entirely logical that, having removed the obstacles advanced by the lumberman as the reason of his inability to manage his lands for a second crop, the public will by legislative enactment require him to so manage them. Personally, I believe that Federal Government should have a considerable part in such legislation. If it becomes entirely a matter of state law, the industry in one state would undoubtedly be placed in an unfair competitive basis with that of another.

It should, however, be on a broad basis, leaving to the local agencies familiar with local conditions the working out of the details.

I am not sure that many of you will agree with me in my conclusion, but I can see no way in which the public can enter upon a policy such as Mr. Allen suggests and take less of a guarantee from the industry than this—that such a policy will mean the actual bridging of the gap of timber shortage.

INDUSTRIAL FORESTRY IN THE SOUTH AND WEST:

WHAT LESSONS EACH CAN TEACH THE OTHER*

By J. B. WOODS

Forester, Long-Bell Lumber Company

In order to make this survey as comprehensive as possible, I have included fourteen southern states with the District of Columbia; making a land area of 605,000,000 acres and supporting a population in 1920 of more than 36,000,000 people. Of this area, about 384,000,000 acres is classed as farm lands, although slightly less than half is improved farms. Only 109,000,000 acres is farm woodlands, while the balance is divided among many uses associated with farming. Of an original forest area in the South of 300,000,000 acres, we estimate that there remains about 178,000,000 acres now classed as forest area. But of course this is not all productive at present, rather it can be kept under forest growth if so desired, and under present conditions is neither suitable nor required for any other purpose. A sketchy classification of this area would be: virgin timber, 30,000,000 acres; growing timber, 50,000,000 acres; poor second growth, 60,000,000 acres; non-productive cutover land, 38,000,000 acres.

In general, this whole area is a low coastal plain, ranging from sea level to one thousand feet, but with occasional interior mountain ranges running up to three thousand feet. Of course the Appalachian chain is much higher and really presents a distinct set of forest conditions. Roughly we might say that the coastal area has been occupied by pure stands of pine, interspersed in the alluvial bottoms with hardwoods and cypress. In the minor mountain areas we find mixed pines and hardwoods, while in the higher country there is a very interesting gradation of species from the typical southern lowland trees, through the northern hardwoods and into pine and spruce, with a generous sprinkling of tolerant species throughout. The climate in general is mild, with plentiful moisture well distributed throughout the year. Soil varies greatly from poor sands and rock debris to rich alluvium and heavy leafmold, and for every soil there is at least one

* Annual meeting, Society of American Foresters, San Francisco, 1927.

valuable timber tree that thrives thereon. I should state here that the semi-arid region of Texas is ruled out of this survey.

This is a splendid climate for growing trees, and while many of the most valuable species are slow to mature, yet we can select a species to suit every condition, which will return very satisfactory growth increments. Among these we might mention, the four most valuable pines, ash, cow oak, yellow poplar, red oak, and possibly chestnut. It is estimated that on good sites one can expect an average of 500 feet log scale per acre per year on fifty year rotation of the pines. Such figures are not very valuable except to indicate that growth is quite satisfactory. But I am satisfied that by practicing good silviculture we shall be able to make our growth realization far exceed the figures we now use.

Despite recurrent natural catastrophes such as floods, tropical storms, cyclones, and insect ravages, the South is a great productive establishment. Her lumber output is too well known to dwell upon; its failure to decline so rapidly as previously estimated has put many of our western operators into the slough of despondency. Her mineral production amounts to more than one-third of the value of the whole country's. She produces more than half the oil and nearly one-fourth the coal of the nation. The average value of her farm crops is about 40 per cent of the country's total farm crop value, and she exports about one-third of the merchandise value of the United States. She is underbuilt as to farm structures, and her tremendous general building progress yearly demands an increasing proportion of her forest products output. And although for a long time she was not considered a manufacturing region, today her output represents more than one-fourth of the country's manufactured values. Add to this the fact that the southern timber producing regions are less than a thousand miles from the greatest centers of lumber consumption, and it becomes apparent that the economics of the region are such as to promise splendid rewards for growing a variety of forest products.

The earliest settlers were expected to extract naval stores for shipment to the mother country, and a timber using population naturally enlarged upon the use of the forests, so that a lumber and naval stores business has been going on for several generations along the Atlantic Coast. But the real development of southern lumbering into its Twentieth Century status came about through the partial exhaustion of Lake States pineries and the tremendous growth of population in

the middle western farming areas. At the same time, or possibly somewhat earlier, eastern operators moved down the coast into the Carolinas to continue the work of forest removal so rapidly accomplished in the New York-Pennsylvania region. And in a short time, around the beginning of this century, the South stepped into the sunlight as a great producer of forest goods.

Logging in the South has undergone great changes since the first mill began to saw pine logs. In the old days they selected the larger and better trees near the streams, dragged them to water with cattle and then floated them to mill or market, either in rafts or in long strings. Later as they worked inland the humble but important mule was employed, hooked to carts or log wagons. Both of these methods permitted, in fact demanded a kind of selection of trees, leaving the smaller individuals in the woods. But with the wide development of logging railroads and the advent of steam skidding machinery this selection gave way to clean cutting, and the small stuff that was not merchantable was left on the ground where the steel cables laid it in broken heaps. Such logging was cheap, but the result was the destruction of practically all forest growth. And today in the South one can tell at a glance as he walks over an old logging site, what method of "log-getting" was employed.

Cupping of trees for resin by cutting boxes into the trunk was a destructive process employed for many years, resulting in loss from fire and wind of much timber. Lumbermen who valued the sawtimber in their forests, devised the system of cupping trees for gum two or three years in advance of logging, thereby realizing the naval stores value without losing any material portion of the sawtimber yield. Cups and gutters were employed in such operations, and in fact have superseded boxing on most areas. But today, with the supply of gum dwindling, naval stores operators are going rapidly over second growth stands of longleaf and slash pine, cupping small trees and destroying the hope of a future pine crop on much of the coastal plain.

Briefly the picture of southern forests today is as follows: cut-over longleaf areas are largely barren, or partially covered with scattering manes of young timber into which the naval stores operators and tie-hackers are working as rapidly as the growth will permit. Mixed shortleaf, loblolly and hardwood stands as a rule are well stocked, but their growth is retarded by yearly ground fires. One of the reasons why so little hill hardwood ever is worth cutting is this

yearly recurrence of fires which scar the lower bole and cause "cat-faces." In the cypress brakes nothing much is left but defective old trees and some young tupelo. Hardwoods are being worked over with very little thought given to aiding Nature to produce another forest of good quality; the trees left usually are crooked and defective.

Lumbermen operating in the South believed firmly that their cut-over lands were needed for a great agricultural development that always was just around the corner. In many cases the character of the land was not allowed to stand in the way of its dedication to farm settlement purposes. There seemed to be no reason for treating land as a source of repeated timber crops, because cheap stumpage always was available farther on. And the market demanded a high quality that could come only from virgin timber. So today we find that comparatively few southern lumbermen are in a position to continue permanent operations in pine. There was a time not so many years ago when the larger operators could have bought up enough of the cutover lands bearing second growth to have stabilized the pine industry and placed it on a permanent basis. A few farsighted men saw that opportunity, but nothing developed in a broad way. So the larger mills are cutting out, and behind them is a horde of scavengers, working through the young stands and in the aggregate producing a tremendous volume of wood. The present lumber output of Georgia is a case in point, having grown tremendously since 1917, but being almost entirely the product of cutover growth stands which long ago were logged lightly with teams. But the agricultural development has not materialized in the expected measure, so many owners now are swinging back to the possibilities of growing trees for the future.

The social aspects of southern forestry and lumbering are interesting and important. When the sawmill man came South he found the native isolated but self-sustaining. He dwelt upon his home patch on the high ground, his cattle and hogs ranged the open woods according to the season, he tilled some bottom land or freshly cleared hillside according to his preferences and circumstances, and when the responsibilities of life weighed heavily upon him he went fishing. He claimed a traditional right to the game and fish, the mast and forage under timber, and even in the forest itself to the extent of his ordinary needs. He would cut the finest tree on the public domain to make shakes to roof his hogpen (providing he was one of those advanced thinkers who believed that hogs ever need a roof over them) and he never would

cut down a rough pine or oak of his own for fuel if by going into a bottom land forest belonging to someone else he could find a large easy splitting ash.

He welcomed the sawmill man in his silent way because mills and camps brought exciting contacts and offered jobs for him when he needed money as well as markets for the products of garden and cornfield. But he never acknowledged any impairment of his old rights to use unfenced land, and he continued to burn the range for his stock, and he expected cutover lands to revert to him for free use as soon as the timber should be gone. In general he was not anxious to see new settlers come in from elsewhere. In fact he appeared to resent any deliberate effort to make cutover lands productive either by settlement or fire protection. This spirit is changing under educational programs but still can be found in some sections.

Growing ambitions of southern counties and states in such matters as public buildings, road and education concurrent with the realization that timber supplies were diminishing, have resulted in tremendous tax increases upon timber properties. Severance taxes in two states were made to stick, although the proceeds are not used for recreating timber supplies. Of course the result of increased taxation was to speed up the cutting of timber. And although three states have enacted taxation measures, intended to promote tree growing, none of them have removed any of the burden from the holders of mature timber. And only a few hundreds of thousands of acres of second growth actually have been placed under such contracts in the whole southern area. I say this not so much in criticism of the various acts (though they may have faults), as in emphasis of the peril of waiting too long before trying by reasonable taxation to encourage the lumberman to grow timber.

Today we are beginning to grow timber in the South, and the importance of such enterprises is increasing. Personally, I do not worry about being sort of a lone bull regarding this business of planting southern pine in the longleaf belt. Because the signs are right for such planting to yield nice profits later on. We can see a market for our thinnings in the cresoting of fenceposts and poles. We can see possibilities of applying the French system of turpentine to our young stands. We believe that sale of pulpwood offers an outlet for thinnings to timber growers in certain sections and in general we believe that the South always will need great quantities of low grade

material, even in the face of low priced wood from the West Coast. Within ten years, southern pine second-growth has taken on a real speculative or investment (call it either) value. The farmer begins to realize that his pole patches have value too great to permit him to raze them for two years' cultivation and then back to pine. And in the aggregate this farmer will now produce a large volume of timber, increasingly greater as time passes. In the West we may expect the same development.

You have read of the large southern operators who are interested in forestry. Some in the longleaf regions are planting trees by the thousand acres. Others in the shortleaf-hardwood areas are buying second-growth and restricting their cutting to the larger trees. Usually the aim is merely to lengthen their operating life, although a few really expect to work out an ultimate balance between cut and growth. The great weakness in this development is one of time; it has come to late. For, gentlemen, the number of such awakened operators is ridiculously small in comparison with the number of operators who have sawmilled in the South during the past fifteen years.

You probably are familiar with the recent expansion of the Kraft paper industry in the South. Some of these enterprises use mill waste, others tops and debris behind the logging. But the material preferred by most of them is large, smooth second-growth that can be handled cheaply and rossed and chipped at low cost. Eventually, I believe this pulp industry will consume large quantities of thinnings, and when properly hooked up with sawmills will result in very complete utilization. But here again we find the movement several years too late, coming when forced along by exhaustion of raw materials elsewhere.

We must spend the next several years putting forests back upon non-agricultural lands of the South. And it will pay us to do so. The responsibility for this situation does not rest on the lumberman alone. The southern public is equally guilty for failing to get the long vision, taxing timber off the lands and offering no inducement for its replacement. Foresters are equally at fault for failing to see the tremendous opportunities for jumping into southern lumbering and winning it over to better ways of handling timber. And logging methods stacked the cards against selective cutting. I think one of our directors expressed one angle of this situation quite well when he said, "The trouble with us in the handling of our longleaf timber is that the logging caterpillar was perfected fifteen years too late."

I hardly know whether to cite any figures about the present status of the West. You all are familiar with our tremendous land area, our great reserve of timber, our populations and the potential empires of settlement. You know that our conditions of tree growth range from the poorest to the best, with probably a preponderance in the second category.

Briefly, I regard the West today as comparable from a forester's viewpoint with the South in 1910. And I think this holds fairly closely from an economic angle as regards local consumption of forest products and the status of manufacturing. Owing to many factors I expect the next fifteen years to bring to the West a faster growth than the last fifteen did to the South.

The rôle of the West in supplying timber for the nation and for export will be such as to endanger the safety of our future forest capital, and I believe that the history of forestry in the South may well be studied by all of us in order that we may avoid duplicating it.

Looking back over the small mill situation in the South today, it is quite evident that owners of virgin timber in the West should begin now to plan for the future control of all second growth areas. Of course the great reserve of National Forests can be made most helpful in stabilizing conditions if the administration policy is sufficiently enlightened. In the South we received little aid, perhaps because the area of National Forests was too small to be felt.

The experience of southern settlement promoters in general, show that it does not pay to crowd poor land under the plow. Failures ensue with resulting damage to the locality and the land is kept barren so much longer. We need a really careful survey of our land areas, looking to land classification as a guide for future settlement of timbered portions of the West. Not long ago I was called to Raymond, Washington, to speak on this subject and found that the Chamber of Commerce actually had a vision of a well defined land use program for Pacific County. I think such examples are highly encouraging.

After many trips through poorly stocked longleaf and hardwood stands, I am impelled to state that our southern experience demands that we consider complete stocking a fundamental requirement. A machine only half occupied is a poor producer and overhead becomes too great. I think the analogy can be extended to land.

Abandoned villages in the South, decreasing industrial railroad mileage and tax delinquent lands all point toward the fact that the

lumber industry must settle down and become permanent. The wastes of migration are too great for the long lived corporation and of course for the welfare of this country.

Aside from the warning to plan ahead for the continued orderly handling of second growth stands, I believe the greatest value we can derive from the story of the South is the assurance that second growth timber in the West will have values sufficient to make silviculture a real practice. We shall find markets for our thinnings here just as in the South. In my Washington planting program I am using mixtures of species intended to yield crops of pulp and poles twenty-five years hence.

I believe the outstanding thing that the West can teach the South is the organization of forest fire protection, and it is only because my time is short that I refrain from a longer word of appreciation. In the South our public is far behind yours here.

However, the number of southern auto licenses on the Pacific Highway last summer indicates that at least some may absorb this *fire consciousness* and take it back home. On other protective work the West is far ahead of the South, partly because our southern need has not been so apparent. But future forestry in the South must cope with insects and diseases.

Another important consideration is that logging in any region must be subordinated to the securing of adequate reproduction. Where this was done in the South (purely by accident) we found good stands of second-growth, where it was not done, we found nothing. If, for operating reasons, this cannot be accomplished, then we must squarely face the problem of artificial restocking of the land, unless we choose to wait several years for Nature to take her own time.

My own idea of industrial forestry in the West is briefly, the putting of our house in order for the future. This involves improvement of our logging methods, maintenance of adequate protection, and seeing to it that our cut-over lands are kept under growing trees. We must proceed quietly to line up productive land areas for the long pull ahead so that we always shall know that our future timber supply will be available when we need it. We must bring the pulp men into our group to use our mill and woods waste; and incidentally the conditions out here are more favorable for the economical manufacture of pulp than in the South.

Of course we must fight persistently for better tax legislation,

not only to encourage reforestation but to make possible the orderly and unhurried working over of our virgin timber reserves. But I cannot see the wisdom of waiting for favorable legislation before we start to grow new forests. We need the public confidence to get good laws and I believe we can show our own good faith and stimulate friendly interest by practicing reforestation while we preach it.

That present lumbering conditions are discouraging is true. Forestry is hard to sell to the lumberman today, but my answer to the statement that forest management is impracticable today is just this: timber growing is a form of land use, and the lumberman can ill afford to carry on his books an unproductive item of property! The lumberman should study his lands and determine what use promises him the surest and best returns. Usually he will find the answer to be to grow more trees either for his own mill or for future sale. I am satisfied that some profitable application of forestry principles is possible for every lumberman who owns the lands over which he is logging.

THE MISSISSIPPI

SYMPTOMATIC TREATMENT OR PERMANENT CURE?

By GIFFORD PINCHOT*

Treatment and cure, or treatment alone—these are the two methods in dispute for dealing with the floods on the Mississippi River.

Twenty years ago Roosevelt advocated the method of treatment and cure. Twenty years ago the whole question was studied by the Inland Waterways Commission appointed by President Roosevelt—was studied also by Roosevelt himself—and a definite and constructive method for control of the Mississippi and other inland waterways was then laid down.

Several years later the National Waterways Commission, appointed by Congress, in substance reaffirmed, supported, and repeated the Roosevelt recommendations to deal with the river as a unit from its source to its mouth, and to make use in controlling it of every means of regulation known not only to engineers but to soil physicists, agricultural experts, foresters, and all others whose knowledge and experience could be brought to bear on this tremendous problem.

In his letter appointing the Inland Waterways Commission, President Roosevelt said:

" . . . Works designed to control our waterways have thus far usually been undertaken for a single purpose, such as the improvement of navigation, the development of power, the irrigation of arid lands, the protection of lowlands from floods, or to supply water for domestic and manufacturing purposes. While the rights of the people to these and similar uses of water must be respected, the time has come for merging local projects and uses of the inland waters in a comprehensive plan designed for the benefit of the entire country. Such a plan should consider and include all the uses to which streams may be put, and should bring together and co-ordinate the points of view of all users of water. The task involved in the full and orderly development and control of the river systems of the United States is a great one, yet it is certainly not too great for us to approach. The results which it seems to promise are even greater.

" . . . Any plan for utilizing our inland waterways should consider floods and their control by forests and other means; the protection of bottom-lands from injury by overflow, and up-lands from loss by soil-wash; the physics of sediment-charged waters and the physical or other ways of purifying them;

* Presented at hearing before Committee on Flood Control of House of Representatives, Washington, D.C., Saturday, January 21, 1928.

the construction of dams and locks, not only to facilitate navigation but to control the character and movement of the waters; and should look to the full use and control of our running waters and the complete artificialization of our waterways for the benefit of our people as a whole."

The essential recommendations of the Inland Waterways Commission were as follows:

"A. We recommend that hereafter plans for the improvement of navigation in inland waterways, or for any use of these waterways in connection with interstate commerce, shall take account of the purification of the waters, the development of power, the control of floods, the reclamation of lands by irrigation and drainage, and all other uses of the waters or benefits to be derived from their control.

"H. We recommend that the Congress be asked to make suitable provision for improving the inland waterways of the United States at a rate commensurate with the needs of the people as determined by competent authority; and we suggest that such provision meet these requisites, viz: Expert framing of a definite policy; certainty of continuity and co-ordination of plan and work; expert initiative in the choice of projects and the succession of works; freedom in selection of projects in accordance with terms of co-operation; and the widest opportunity for applying modern business methods."

In transmitting the report of the Inland Waterways Commission to Congress, on February 26, 1908, President Roosevelt said:

"The first condition of successful development of our waterways is a definite and progressive policy. The second is a concrete general plan, prepared by the best experts available, covering every use to which our streams can be put. We shall not succeed until the responsibility for administering the policy and executing and extending the plan is definitely laid on one man or group of men who can be held accountable. Every portion of the general plan should consider and so far as practicable secure to the people the use of water for power, irrigation, and domestic supply as well as for navigation. . . .

"The improvement of our inland waterways can and should be made to pay for itself so far as practicable from the incidental proceeds from water power and other uses. Navigation should of course be free. But the greatest return will come from the increased commerce, growth, and prosperity of our people. For this we have already waited too long. Adequate funds should be provided, by bond issue, if necessary, and the work should be delayed no longer. The development of our waterways and the conservation of our forests are the two most pressing physical needs of the country. They are interdependent, and they should be met vigorously, together, and at once. The question of organization, powers, and appropriations are now before the Congress. There is urgent need for prompt and decisive action."

Second thought left him of the same opinion, for in his Autobiography Roosevelt said:

"The preliminary Report of the Inland Waterways Commission was excellent in every way. It outlines a general plan of waterway improvement which when adopted will give assurance that the improvements will yield practical results in the way of increased navigation and water transportation. In every essential feature the plan recommended by the Commission is new. In the principle of co-ordinating all uses of the waters and treating each waterway system as a unit; in the principle of correlating water traffic with rail and other land traffic; in the principle of expert initiation of projects in accordance with commercial foresight and the needs of a growing country; and in the principle of co-operation between the States and the Federal Government in the administration and use of waterways, etc.; the general plan proposed by the Commission is new, and at the same time sane and simple. The plan deserves unqualified support. I regret that it has not yet been adopted by Congress, but I am confident that ultimately it will be adopted."

The essential conclusions of the National Waterways Commission were as follows:

"The use of storage reservoirs as a means of controlling floods, although expensive, becomes more practicable where the value of property liable to damage is great and where the reservoirs can be used simultaneously for other beneficial purposes, such as power development and aiding navigation. . . ."

"The commission favors the prevention of deforestation of mountain slopes wherever the land is unsuitable for agricultural purposes and urges the reforestation of those tracts which have already been denuded, not only when located at the headwaters of navigable streams, but wherever this would be the most valuable use of the land. . . ."

The attitude of the Commission toward electric development is interesting:

"The adoption of a comprehensive policy of water-power control is most urgent for two reasons: (1) Because we are entering upon a period of unprecedented water-power development, which in time will constitute one of the greatest industries of the continent; and (2) because existing laws relating to this subject are in a most crude and unsatisfactory condition, not being adequate either for proper Government control of these enterprises or adapted to encourage water-power development. . . ."

"As already stated, it is the opinion of the commission that the hydro-electric business, both because of its intimate relation to the use of streams for purposes of navigation, and because it will inevitably, in many instances, become interstate in the scope of its operations, must eventually become a subject of complete Federal control."

President Taft, during whose term this Commission was appointed and made its report, is on record, as well as Roosevelt, in favor of the same general plan. So is President Wilson.

In a telegram addressed to Senator Francis G. Newlands of Nevada, then at the head of the National Irrigation Congress, dated September 30, 1912, President Wilson said:

"Please express to the National Irrigation Congress my hearty approval of the policy it is met to promote, and especially of the policy of supplementing bank and levee protection by storage of flood waters above for irrigation and water power, turning floods from a menace into a blessing and at the same time abundantly feeding navigable waters."

Roosevelt himself is authority for the statement that the Army Engineers defeated his plan, which was also in its essentials the Taft plan, the Wilson plan, and the plan of every commission outside the army appointed to consider this subject since the Civil War.

The plan thus approved by three Presidents has never been carried out. If it had been, the recent tremendous demonstration that the policy of levees-only is wrong would never have afflicted the people of the Lower Mississippi.

But in spite of this tremendous demonstration, the treatment-alone idea is still the official view, supported by the Army Engineers, the Mississippi River Commission, and the present administration.

You can deal with a typhoid epidemic in one of two ways. You can take care of the patients after they reach the hospital and see that the best treatment medical science can give them is theirs, and stop there. Or you can not only take care of the patients after they reach the hospital but you can also find out what is wrong with the water supply and, while dealing with the existing epidemic undertake to see that it does not occur again.

In typhoid usually, in floods always, the trouble is with the water supply—and where the trouble is there the remedy ought to be applied. You must of course deal with illness in a patient and flood in a river when it occurs, but in both cases prevention is better than any amount of cure after the patient is sick.

There is this difference between controlling the floods of the Mississippi and controlling a typhoid epidemic. You cannot make money out of controlling an epidemic. You can make money out of controlling a river.

The official plans for river regulation before the Committee deal

solely with flood control. They are nothing more than plans for the hospitalization of the river. The Roosevelt plan, which, general as it is, seems to me the only sound plan, not only provides for taking care of the river while it is actually in flood, but also for preventing a long succession of floods in the future.

It was the fundamental idea of Roosevelt's Inland Waterways Commission that in dealing with a river "all uses of the waters and all benefits to be derived from their control" should be fully considered and realized to the full limit of practicability. That meant, in relation to the Mississippi, that not only flood control but navigation, irrigation, drainage, electric power, domestic and manufacturing water supply, game, fish, and every other use or benefit should all be taken into consideration, and that the river should be so treated as to get for the public in each of these lines the maximum possible service.

While we are preventing the Mississippi from doing harm, I believe it would be unwise and wasteful not to provide for getting from it every positive benefit it can be made to yield.

How much these benefits are in quantity no one is yet in a position to say. But what they are in kind we know already.

Because it drains the central valley of the greatest nation in human history, the Mississippi River system is undoubtedly more useful and more serviceable, if properly controlled, than any other on the face of the globe. It is also, for the same reason, the most threatening and most dangerous if uncontrolled.

For more than twenty years I have been intensely interested in the problems of the Mississippi. As a member of Roosevelt's Inland Waterways Commission I twice traveled the navigable length of the river. I have been upon its tributaries in all of the 31 states of its system, and I joined in the investigations whose result is given in the Commission's report.

Roosevelt's National Conservation Commission, of which I was chairman, included in its work a special study of waterways and stream control, and I have been closely interested in questions of flood prevention in my own state of Pennsylvania, and in the gigantic water power problem all over the United States. The United States Forest Service, while I was connected with it, was the first Government organization to regulate the development of water power.

For more than a quarter of a century I have had knowledge of the forest and irrigation work of the United States, and I took occasion last

spring to make myself personally familiar with certain parts of the flooded area in Louisiana.

It is because of this experience that I venture to lay my view before the Committee.

I regard the control of the Mississippi River as a National problem, the cost of which should be born directly by the National Treasury. There is in my view no more reason for requiring local contributions to flood control works on a navigable river than there is for requiring local contributions to the equally National problem of developing the harbors of San Francisco, Galveston, or New York.

Entirely apart from this consideration, I am convinced, from what I know of the conditions of the flood devastated areas, that even if the government should attempt to make them contribute to the restraint of the waters which have originated in other states and flowed over them, the result would be simply to delay the prosecution of the enterprise and to keep these lands open to devastation by future floods.

Colonel Potter, head of the Mississippi River Commission, in his testimony proves definitely that, even before the recent flood, money appropriated by the United States for levee construction, contingent upon local contributions, could not be spent in full because the localities were unable to pay their contributing part as the law required.

Specifically my suggestion is:

(1) That whatever may be immediately necessary for the relief of the flood sufferers in the Lower Basin of the Mississippi, and whatever practicable steps can be taken at once to prevent the recurrence of a similar calamity, should be taken without delay.

(2) That the government of the United States should undertake a comprehensive survey of the whole Mississippi River system with the idea of developing all practicable methods of flood control, and all practicable methods of increasing the usefulness of the Mississippi system to the people who live within the Mississippi Basin.

To this end I suggest that the work of preparing a comprehensive plan be entrusted to a commission so organized that no official point of view already crystallized and adopted shall control. This commission should contain in its membership experts in all methods of flood control and stream utilization.

By that I mean that the commission should include not only representatives of the Army Engineers, but what is far more important, that

it should include representatives of the very best engineering knowledge and experience in civil life.

From the very nature of their training and experience the Army Engineers cannot be our foremost experts in river control. Professionally they are soldiers, trained as such, and only secondarily, incidentally, and temporarily concerned with rivers. They are military and not civil, or hydraulic, or irrigation engineers.

The most illuminating commentary on the preparedness of the Army Engineers to handle the problem of the Mississippi is furnished by their own confession, made in my hearing by the Secretary of War at Chicago in July last, that after fifty years of attempted control of the river they were not prepared with any plan to submit to Congress when the recent great flood made its unanswerable commentary upon the official policy they had been following and defending so long.

Every important phase of engineering which must be reckoned with in a complete plan for the control and use of the Mississippi system, such as hydro-electric engineering, irrigation engineering, sanitary engineering, etc., ought to be represented in such a commission and by the very best man the profession can supply.

The commission should embrace also the best available experts in other lines of flood control and stream utilization, such as soil physicists and foresters. It should include also experts in the social, economic, and financial questions which must necessarily be considered if this great problem is to be envisaged so as to include all its elements. I mean, for example, agriculture, business, community problems, and transportation.

Just what proportion of the necessary expert knowledge should be included in the actual membership of the commission, and what proportion should be represented in an advisory committee, or otherwise permanently attached to the commission itself, is a matter for your consideration. The point I want to make is that even flood control alone includes far more than is covered by any or all schools of engineering.

And when not only the prevention of damage but the utilization of a great natural resource is in question, then it is imperative that we should add to the best engineering information and experience in America also the best knowledge and experience in the many other lines of expert knowledge which must necessarily be consulted and concerned in any wise solution.

As a forester I recognize that forests alone do not offer a complete

solution of the flood problem. But I contend, and I believe that the conclusive proof was submitted in the brief of the U. S. Forest Service, that forests can render very valuable aid in dealing with this gigantic problem, and are not to be cast aside as unworthy of consideration, as the official plans have done.

Official opinion, after having condemned reservoirs as equally unworthy of consideration with forests, has apparently begun to veer toward a limited use of them. My contention is that no one is yet in position to say how far reservoir sites may be made to serve in flood control because sufficient studies upon which alone a conclusive answer can be based have never been made.

In the same way it is contended that these reservoirs even if practicable for flood control could never be of use in the development of electric power. I quote Secretary Hoover in rebuttal. Within the past year and a half in an address before the Columbia River Basin League he said, with specific reference to the flood control problem, that the urgent requirement was "a determination of plans to create headwater storage . . . thus saving vast wastes of destruction and providing for an increase of low water flow not only as a contribution to summer navigation, but also for its direct returns in reclamation of land and power."

He also pointed out the advantage of storage on the Tennessee and the Cumberland by which 3,000,000 horse power could be developed and "I could cite," he went on, "the instance of the Arkansas River, where, if adequate headwater and collateral storage should be provided, the river could not only produce a considerable amount of power but its destructive floods would be reduced, the loss of life and property would be safeguarded, and the low water flow could be increased so as substantially to improve its navigation possibilities."

I believe, and no one in my opinion is in a position to disprove it, that reservoirs in the Mississippi Basin can not only be made to play a most important part in flood control but also that if properly designed and located they may supply electric power enough to take a very considerable percentage of the burden of this undertaking off the backs of the taxpayers. The proposed flood control, irrigation, and power dam at Boulder Canyon on the Colorado, the whole cost of which is to be paid by the power developed, is a case in point.

I may be right or I may be wrong, but whether I am right or wrong there can be no valid argument against such a study of the

possibilities of reservoir construction and electrical development as will supply the basis for a reliable answer.

The whole history of human progress, from Columbus backwards and forwards, is a story of the successful doing of things in the face of declarations by the wiseacres of the moment that what it was proposed to do was impossible.

The story of Mississippi floods is punctuated by a succession of assertions from official sources that the policy of levees alone was sound and sufficient, and an equally constant succession of contradictions of that assertion by the river itself.

For the three years beginning in 1924 the report of the Mississippi River Commission speaks of the improvement of the Mississippi as "now in condition to prevent the destructive effects of floods."

This assertion was made for the last time only a few months before the flood of 1927 proved that it was not worth the paper it was written on.

In my judgment the most serious danger to adequate and permanent flood control and river utilization in the Mississippi Basin is the intractable attitude of officials who, having taken a position, demand (the forces of nature to the contrary notwithstanding) that their view once expressed shall always be right. It is for that reason imperatively necessary, in my view, that whatever body is entrusted with this greatest conservation problem in human history shall approach it without preconceived decisions and with the best and broadest obtainable knowledge, experience, and attitude of mind.

REVIEWS

Vegetation of Mount Desert Island, Maine, and Its Environment. By Barrington Moore and Norman Taylor, Brooklyn Botanic Garden Memoirs, Vol. III, 1927, pp. 151.

The point of greatest interest in this work is unquestionably the apparently incongruous mixture of northern and southern species which the authors have found in close juxtaposition upon Mount Desert Island. It is true that our suspicions are aroused by a sentence in the first paragraph: "The island is a common meeting ground of plant associations which flourish from central New Jersey to Labrador." This has a strangely familiar ring. It has been said of many localities, for the limits of plant ranges are so variously spaced that by an appropriate selection of species almost any area may be plausibly presented as a "meeting ground of northern and southern" or of "eastern and western forms." But, reading on with open minds, we presently discover that among the dominantly coniferous forests which very normally clothe the bulk of the island there are certain areas where pitch pine (*Pinus rigida*) makes nearly pure growth, and that one good-sized hill is pretty well covered by scrub oak (*Quercus ilicifolia*). There is also a small group of subordinate species which belong properly to the coastal plain home of the two trees just mentioned. Conspicuous among these are the broom crowberry (*Corema conradii*), heath-like *Hudsonia* (*Hudsonia ericoides*) and two goldenrods (*Solidago bicolor* and *S. puberula*). These, moreover, upon Mount Desert Island are specially characteristic of the areas dominated by pitch pine and scrub oak. Growing actually with these are other species of distinctly northern, even of arctic affinity: three-toothed cinquefoil (*Potentilla tridentata*), a northern goldenrod (*Solidago randii*), eye-bright (*Euphrasia canadensis*), mountain starwort (*Arenaria groenlandica*). We note further that the dominantly southern pitch pine community grows almost in contiguity with the typically northern forests of spruce and balsam. With this motley assortment before us we are compelled to admit that here is something that may reasonably be termed "a meeting ground" of northern and southern species and communities.

The cause of this close association of alien forms, as given by Moore and Taylor, lies in past history. During the glacial period,

and probably before, the coastal plain continued beyond its present northern terminus at Cape Cod as far as Newfoundland. This extension would naturally bear vegetation like that of similar portions of the strip farther south. "It is not unlikely that, as the ice advanced, the coastal plain plants retreated to the edge of the wide coastal plain which was not reached by the southernmost extension of the ice sheet. With the final retreat of the ice, these plants reached the mainland, where they are found today." This hypothesis is in line with the well-known occurrence of certain coastal plain plants in Nova Scotia and Newfoundland, notably the fern, *Schizæa pusilla*. It is interesting to find that "the records show that evaporation and soil temperature are higher in the type representing the most southerly geographic region (pitch pine). . . . The environment is very unfavorable in the pitch pine forest, owing to excessive atmospheric dryness, and is favorable in the spruce." Obviously the pitch pine and its companions have held on in the least desirable locations because of lack of competition therein.

Turning to those vegetation types which may be considered normal to the region, we find that upon Mount Desert Island they are seven: spruce, fir, northern hardwoods-spruce, hardwoods, white pine, white cedar swamp, mixed conifer. The last is the most abundant type and also the most variable. Two climatic climaxes are recognized, the spruce type and the northern hardwoods-spruce. The former is coastal, being especially extensive upon the southern portion of the island facing the open sea; the latter is represented by a few small remnants in the interior, much of the vegetation of this part of the island being in process of secondary development after fire.

The successional relations of the communities are shown graphically in a diagram and described in detail. The early stages originating upon rock surfaces are of the normal type frequently reported for the northern states and Canada. The later developmental stages, especially the approach to the climax, are not lucidly presented in the text, and an overly large degree of emphasis is given to the shrubby and herbaceous elements. It almost seems as though the trees were regarded merely as providers of suitable environment for the subordinate species rather than as dominating the trend of developmental change. This impression is intensified by study of their Fig. 23, showing graphically the rôle of twenty-two Mount Desert plants in the

development of the vegetation. Not a tree appears, and except for pioneers such as lichens, no true dominant. The majority are shrubs and herbs of the forest floor, exerting a comparatively insignificant influence upon successional trend.

In the bog succession, species of *Sphagnum* are very important. They invade the open water of ponds after the manner described by Nichols for northern Cape Breton Island, which is very different from the behavior characteristic of the genus in the Great Lakes region, where the building out of a sedge mat is a necessary preliminary to the establishment of the moss.

The authors made measurements of various environmental factors during four growing seasons, those studied being evaporation, solar radiation and soil temperature. Stations were selected representative of four forest types: pitch pine, white pine, red oak and spruce. In each type instruments were placed in the open and under normal shade conditions, this arrangement providing opportunity to observe the primitive conditions of the habitat and the changes wrought therein by the vegetation established upon it. An interesting bit of additional information was obtained by running a series of evaporation and soil temperature measurements in a pitch pine locality upon Long Island, parallel in time to that upon Mount Desert. In general it was found that these four forest types fall into the same order with regard to warmth and evaporation: pitch pine driest and warmest, with progression through white pine and red oak to spruce at the opposite extreme. There is evident correlation here with the successional series. In the comparison between pitch pine stations upon Mount Desert and Long Island, a higher rate of evaporation was found upon the former, certainly a surprising result. The authors offer in explanation the hypothesis that "the high evaporation of Mt. Desert Island seems to be due to the interaction of the surrounding cold sea water and sun-heated granite hills." The prevalent southwest wind, passing over the cold waters of the Gulf of Maine, loses much of its moisture. Upon striking the sunny granite, it becomes warmed, with a consequent decided drop in relative humidity. One generalization ventured by the authors seems a little rash, considering the amount of data available: "The indications from these figures, considering the two years, are that a climax deciduous forest has a little lower rate of evaporation than a climax coniferous forest, except where the latter is on a distinctly colder site."

In the interest of clear thinking and expression, a few minor inaccuracies are worth noting. On p. 26 the authors express a preference for Nichols' phytogeographic treatment of eastern North America over those offered by certain other writers, on the ground that "Nichols' division is based upon the distribution of certain trees rather than on temperature, moisture or some other physical factor, and is broader than the divisions based on rainfall and evaporation by Transeau, Shreve and others." This is a serious misstatement and unjust to the two last named authors. Both base their vegetational regions upon species—ranges alone, later correlating them with climatic areas independently arrived at. Transeau, in the paper cited by Moore and Taylor,¹ states (p. 886) that "if the ratios produced by dividing the amount of rainfall by the depth of evaporation for the same station be plotted on a map, they exhibit climatic centers which correspond in general with the centers of plant distribution." Shreve is still more explicit:² "It has been particularly important to base the subdivisions and boundaries of the map upon purely vegetational criteria, with complete disregard of climatic, physiographic, geological, floristic, historical or other considerations."

On p. 61, in relation to soil temperature, it is stated that "the minimum readings involved the problem of keeping the thermometer in a nearly horizontal position in the soil, something which had not yet been done in this kind of work. The difficulty was met by constructing wooden boxes . . . ," etc. The same expedient was used by Shreve in 1913,³ though at a lesser depth.

The word "telescoping" as applied to the successional process has become rather well established in ecological terminology. In the present work it is used in two senses. On p. 26 it is stated that "the deciduous trees advancing north, after being driven south by the glaciers have telescoped with the coniferous trees which followed the retreat of the ice." In other words, the deciduous trees have overtaken the conifers so that in this region the two types occupy the same general area. On pp. 85-86 we read that "there is sometimes a certain

¹ Transeau, E. N. Forest centers of eastern America. *Am. Nat.* 39:875-889, 1905.

² Shreve, F. A map of the vegetation of the United States. *Geog. Rev.* 3:119-125, 1927, p. 119.

³ The vegetation of a desert mountain range as conditioned by climatic factors. Carnegie Institution of Washington Pub. 217, 1915, p. 86.

amount of 'telescoping,' that is, a stage may be skipped." Plainly both uses cannot be correct, and, remembering the construction of the instrument from which the term is derived, the first must be the accepted one.

There are in the work one or two instances of thinking which seems strangely unscientific. For instance, a case of extreme anthropomorphic expression (p. 93): "These herbs and low shrubs are not the only ones that play a part in the struggle to produce a substratum which will maintain a higher form of plant association than they can ever themselves become." The work is intended in part for the non-scientific reader, which intensifies the fault; the working scientist suffers no harm, but the layman will surely be misled by such a manner of expression. Again (p. 101): "It is as if, forest vegetation being obligatory, but the climatic climaxes of spruce or northern hardwoods-spruce being impossible, the best expression of forest growth that *can* mature in these warm rocky places is the pitch pine." Why is forest vegetation obligatory, and who or what will enforce the obligation?

In general, we have in this work a thoroughly adequate study of an unusually interesting region. The standard is high, which makes the lapses just noted all the more to be regretted.

WILLIAM S. COOPER

Biological and Practical Researches Into Bluing in Pine and Spruce. By Lagerberg, F., Lundberg, G., and Melin, F. Svenska Skog-Vardsförenings Tidskrift, 2:145-272, 69 Fig. 2 col. pl. 1927.

Without any question this is one of the most important researches on sap-stain since that of Münch in 1907. It is of course true that several important studies of sap-stain have been made in this country, but with few exceptions the emphasis has been placed on its prevention rather than on its cause.

The paper here reviewed is the first of two by Lagerberg, Lundberg and Melin dealing with the sap-stain problems in Norway and deals primarily with the biology of the process. The second paper, which, it is hoped, will appear soon, will report the results obtained from a study of sap-stain control.

On the whole the results reported confirm those of Münch. In addition, however, a large number of species of the Fungi Imperfecti were found to be the cause of important wood stains indicating that the whole problem of sap-stain is far more complicated than ordinarily

thought. The following fungi are shown to be the cause of sap-stain in Norway. This includes six new species and three new genera.

Ascomycetes

- Ceratostomella coerulea* Münch
- Ceratostomella piceae* Münch
- Ceratostomella pluriannulata* Hedgcock
- Ceratostomella pini* Münch
- Endoconidiophora coerulescens* Münch

Fungi Imperfecti

Sphaeropsidaceae

- Sclerophoma entoxylina* Lagerberg and Melin
- Discula pinicola* (Naumov) Petrak
- Discula pinicola* var. *mammosa*

Hypomycetes

- Hormonema dematioides* Lagerberg and Melin
- Trichosporium tingens* Lagerberg and Melin
- Hormodendrum cladosporioides* (Fres.) Sacc.
- Hormodendrum microsporum* Lagerberg and Melin
- Leptographium lundbergii* Lagerberg and Melin
- Cadosphora fastigiata* Lagerberg and Melin
- Alternaria humicola* Oudemans
- Xylomyces* I.
- Penicillium biforme* Thorn.

Two fungi, namely, *Discula pinicola* and *Endoconidiophora coerulescens* were found in living but blazed spruce trees, indicating that some of the sap-stain fungi at least may be active parasites. It is of course well known that Münch inoculated pine trees with *Ceratostomella pini* and found that this fungus may act as a parasite provided the water content of the sap-wood is not too high. As a matter of fact, Münch regards all sap-stain fungi which are capable of attacking recently felled sapwood as parasites.

From a practical, if not scientific point of view, one of the most interesting results recorded in this work is the fact that some of the organisms involved in sap-stain may cause almost complete dissolution of the ray parenchyma cells. In fact the ray parenchyma of pine wood attacked by *Sclerophoma entoxylina* disappears completely. It is also shown that many of the fungi studied have the capacity to penetrate

even the lignified tracheids with comparative ease. It is hard to believe that wood which has undergone as far reaching changes as some pictured and described in this work could have unaltered physical and mechanical properties. In America, it has been generally assumed that blued wood is equally as strong as normal wood. Münch's data also indicates that this is the case, although he found that wood which had been acted upon by sap-stain fungi for a period of six months was considerably weaker than normal wood, but this was inscribed to the action of contaminating wood destroying fungi. It may well be, when all of the facts are known, that certain sap-stain fungi actually materially decrease the specific gravity and the strength of wood.

It seems strange indeed that so little work has been done on the biology of sap-stain fungi in this country. No really comprehensive study of the subject has been made since that of Hedgcock and invariably *Ceratostmella pilifera* or *Ceratostomella* sp. is assumed to be the cause of the stain. Now that Lagerberg, Lundberg and Melin have confirmed the validity of Münch's species of *Ceratostomella* it is high time that the causal organism involved in sap-stain in this country be studied in detail.

HENRY SCHMITZ

The Seed Production of Forest Trees, Year 1926. By G. Mellström. Flygblad No. 36. Svensk Skogsförsöksanstalt.

Observations on seed production for each district in Sweden are sent in to the Government forest office every year by the forest supervisors. The experiment station works up the data. An example of how the data is worked up and presented follows:

Weather conditions during the previous vegetative period are described. Temperature and precipitation are considered of chief importance. For pine, the weather conditions for two years are required. Monthly temperature and precipitation figures are described as being above or below the normal (for 65 years) in each of the three major geographic divisions—Norrland, Central Sweden and South Sweden. During 1926, the precipitation fell especially unevenly.

PINE

Blooming—The low temperature of the month of May resulted in the pine blooming quite late. Only in a few places in south Sweden did it begin blooming as early as the last of May; in south Sweden 10 to 15 days later than ordinary and in Norrland 5 to 10 days later. As in the two previous years, pine bloomed all over the land, not evenly but

yet quite satisfactorily. The 1926 blooming indicates that the weather conditions of the summer of 1925 must have been especially favorable for the formation of flower buds, since in 1923 there was a heavy seed year and the trees have not taken their customary rest period of several years since then. Mid summer was very warm and September had a normal temperature.

From all of Sweden, 833 observations on open growing trees were made and 817 on the blooming in stands.

Position of Trees	No. of observ.	Blooming			
		None	Weak	Average	Rich
Open Growing In Stand	833	4%	37%	46%	13%
	817	13%	57%	27%	3%

One year old pine cones—Description given as to number and possibilities for next year's pine cone crop.

Two year old pine cones—Repeated last year's one year old cone description. Agreed all right with this year's report.

Pine cones' character—A table is given showing for each district the result of close inspection of from 40 to 60 cones as to whether "well developed" or "poor" and "healthy" or "injured" in per cent of total number.

A map showing the isotherm of $+13^{\circ}$ C for June-August inclusive, indicates the boundary line as found by Wibeck for pine seed with 50% or better germination. Pine seed grown in the area of less than $+13^{\circ}$ C for the three months generally gives germination of less than 50%.

SPRUCE

Same general description.

For birch, oak, beech and other less important tree species in Sweden, a brief description is given for each.

JAMES L. AVERELL

Selective Logging in the Northern Hardwoods of the Lake States. By Raphael Zon and R. D. Garver. Northern Hemlock and Hardwood Manufacturers' Association, Oshkosh, Wisconsin, 1927. Pp. 23. Twenty-five cents.

This is an advance report on a study to determine the comparative advantages of selective and clear cutting the northern hemlock-hardwood forest of the Lake States. It sets forth:

- (1) The cost of logging and milling trees of different sizes.
- (2) The quantity, grade, and value of lumber they produce.

The study was made co-operatively in 1925 and 1926, by the Lake States Forest Experiment Station, the Forest Products Laboratory and the Northern Hemlock and Hardwood Manufacturers' Association. The "locale" was 2 operations in Northern Wisconsin and 2 in the upper Peninsula of Michigan. Stop watch records were kept of the time required per M. feet to fell trees of different diameters, also the time necessary to buck, skid, load, and mill the various sized logs. In calculating the production cost for each diameter class, the average log run costs of the four companies were used. There were measured 900 trees of super maple, yellow birch and hemlock, resulting in 3,647 logs. Scale used was Scribner Decimal.

On 3 five-acre sample plots all trees 4 inches and up were measured. The largest tree was 34 inches d.b.h.

The outstanding results of the study are:

1. *Logging costs decrease with an increase in the size of the log;* that is, the direct cost of logging per M. for small logs is much greater than for large logs. Logs over 12" top diameter cost less to produce than the average log run of \$8.38 per M.

2. *Over-run is larger in small than in large logs.* The average over-run of 18.1% (mill scale over log scale) is exceeded by all logs less than 12" top diameter.

3. *Milling costs decrease with the increase in size of the log.* The log run milling cost is \$12.82 per M. This is exceeded by all logs 12" or less in top diameter.

4. *Lumber grades are higher in large logs.* In consequence, the average value of the lumber is greater. A log run value of \$34.28 per M. feet of lumber is attained only by logs 14 inches or more in top diameter in sugar maple. The corresponding figures for yellow birch logs are \$43.09 and 15 inches; \$22.45 and 11 inches for hemlock.

In order to apply these principles to the woods, the costs were changed from a log to a tree basis by determining the diameter of the average log in each diameter class of trees. Thus the cost of producing lumber and its value by *diameter classes* was calculated. This revealed that:—

5. *A tree must be at least 12 inches in diameter (breast high) before the lumber from it is worth more than the cost of production.* With a log run value per M. feet of \$33.08 (all species) for lumber

and total costs of \$19.92 per M. feet, the differential of \$13.16 per M. is exceeded only by trees over 18 inches d.b.h. In general a tree must be about 13½ inches d.b.h. to "pay its way." But for the conditions studied, the highest profit per M. feet occurs when only trees 18 inches d.b.h. and larger are cut. With higher diameter limits the differential between production costs and value of lumber diminishes.

6. *The greatest profit per acre occurs when only trees 12 inches in diameter breast high and larger are cut.* The differential between production cost and value of lumber reaches its maximum at a diameter limit of 18 inches d.b.h. (See No. 5) but the total return per acre is maximum at a diameter limit of 12" d.b.h. At this point total returns are \$147.37 per acre whereas at 18 inches limit they are \$108.39 per acre.

The report concludes with a discussion of the advantages of selective logging, showing that it:

- (a) Removes the most value with the least volume.
- (b) Allows early second cut. (In 20 years with 18 inch limit).
- (c) Saves the small trees.
- (d) Solves the small log problem.

Small logs cut from small trees are cut at a loss. Small top logs from larger trees show a slight profit.

(e) Timber under selective logging has a higher value. The value of timber per M. feet log scale reaches a maximum of \$9.60 per M., log scale, at a cutting limit of 17 inches and up.

(f) Logs under selective logging have a higher value. The average value of logs per M. feet log scale, all species, is \$23.13. This is attained only by logs over 12 inches top diameter.

This altogether admirable report is the most potent argument in favor of selective logging. It is couched in terms the lumberman can understand and brings measureably nearer the rapprochement of utilization and forest management. More studies of this kind are needed.

A. B. RECKNAGEL

A Manual of Woodlot Management. By C. J. Telford. Bulletin of the Natural History Survey of Illinois, November, 1927. P. 94.

This is a manual addressed to land owners who have woodlots or idle land. The significant feature of this Bulletin is that the author shows an intimate, first-hand knowledge of the conditions effecting

forest growth in Illinois. Mr. Telford's extensive experience in connection with the Natural History Survey of Illinois enables him to speak authoritatively concerning matters pertaining to the farm woodlot. The viewpoint of woodlot management exhibits common sense throughout. The author first attempts a discussion of land classification indicating in it the factors which must be considered in justifying the use of land for woodlot purposes. He estimates the requirements of the average farm as being 17.1 acres, based upon an annual average production of 41.1 cubic feet. Mr. Telford undertakes to distribute this annual requirement in terms of posts and other timber illustrating it by the use of concrete examples.

Woodlot protection is treated in two pages in the Bulletin, precedence being given to grazing as more important than fire, considerable importance being attached to damage by insects and fungus diseases. The author makes a particular point of the adaptation of different trees to the several types of soil common to the state, giving average rates of growth for a number of the important species, these results being based upon specific examination of even-aged stands. An extensive list of species recommended for the various soil types is included. Under the general heading of silviculture the author has discussed in detail both the treatment of even-aged stands and the treatment of all-aged stands by the selection system. In the latter instance, perhaps, a greater amount of stress should be placed on the use of group selection for the management of hardwoods. Included under the discussion of selection system is a brief treatment of the use of diameter limit. The author advocates planting to re-enforce hardwood stands, recommending for this purpose black walnut, tulip poplar, and basswood especially, giving less attention to the use of red oak. A brief discussion of the growing of hardwood planting stock is included.

For the purpose of planting cleared areas detailed treatment of necessary methods is included, this being based on the necessity for individual land owners growing their own planting stock. Six species of coniferous trees are used in illustration, the assumption being that these are recommended for planting. Soft woods are recommended for the production of Christmas trees, and cottonwood for plantations on bottomland. Several tables are quoted from Department of Agriculture Bulletins.

The need for growing post timber is recognized, catalpa and black locust being given preference with osage orange where hedges can still

be grown. The author discusses the measuring and marketing of woodlot products, furnishing the woodlot owner with tables to assist him in determining the value of his materials. Methods of timber estimation are discussed and tables given for computation. Appendix A discusses the preservative treatment of fence posts. Appendix B gives lists of nurserymen and tree seed dealers. Appendix C is an extensive list of possible purchasers of woodlot materials. On the whole there is assembled in this Bulletin a great deal of useful information which will be of service to the woodlot owner.

E. F. McCARTHY

NOTES

WHAT IS INDUSTRIAL FORESTRY?

By W. N. SPARHAWK

Some cynics maintain that so-called industrial forestry is the feeble-minded offspring of business and forestry, lacking the good qualities of either parent; in short, that it is neither good forestry nor good business. Perhaps this is a just evaluation of some of the enterprises that have paraded under the name of industrial forestry. Perhaps the fault lies in a too elastic definition of the term.

It has been suggested, for instance, that "industrial forestry" is more or less synonymous with "private forestry" and "conservative lumbering." To me these three expressions do not mean the same thing. Private forestry may be perfectly good forestry but not good business by the usual standards of rating business enterprises; the owner may consider that his returns in the shape of amenity values compensate him for low returns or even losses in terms of per cent. As Schenck truly observes, much private forestry in Europe is on this basis. Fire protection and conservative lumbering, on the other hand, may be undertaken because they are good business without any intention whatever of continued production of forest crops.

Real industrial forestry is correctly defined by Zon in the January *JOURNAL* as *timber-growing as a business enterprise*. Reed, in his letter to Schenck (see *JOURNAL* for January, 1927), is consistent with this definition when he says "it is encouraging that concerns who heretofore have been engaged solely in the business of *harvesting* timber crops should have the wisdom now to vision the possibilities in *growing* them." Both Reed and Zon place the emphasis where it belongs—on *growing* forest crops.

Although Munger's definition also emphasizes timber growing, it seems to me to be defective in two respects. It restricts industrial forestry to commercial woods operations, which I should interpret to mean active logging enterprises. May not industrial forestry also include the reforestation of land already denuded and the management of young forests with the object of supplying timber for future operations? I think so. My other criticism of the definition is that it fails to specify the purpose for which timber crops are to be grown. If a lumber company leaves the land in good shape merely to prevent spoiling the scenery or because it hopes that restocking land can be sold at a higher price than denuded land, that is not industrial forestry. Nor does a woodlot owner practice industrial forestry when he handles his tract for the production of firewood, fence posts, and other products principally for his own domestic use. The objective of industrial forestry should be the production of timber (or naval stores or other products) to meet industrial needs.

If a more elaborate definition than Zon's six-word one is needed, I would suggest the following:

"Industrial forestry is the utilization and management of forests and forest lands by individual or corporate owners for the purpose of promoting the continued production of forest crops for industrial use."

REPRODUCTION OF ADIRONDACK WHITE CEDAR BY NATURAL CUTTINGS

BY WILLIAM M. HARLOW

In the western Adirondacks near Cranberry Lake, New York, white cedar (*Thuja occidentalis* L.) normally grows in shallow basins characterized by the lack of good drainage and the presence of sphagnum overlying a shallow deposit of black muck. Incident to an ecological study of the structure and growth of this species as influenced by extremes of site,* a survey was made of the natural reproduction in virgin stands, and evidence found of occasional rejuvenation by natural cuttings.

A number of such sites in virgin timber were carefully examined for evidence of seeding reproduction but in no case were seedlings of this species found. Since the stand of cedar in such places is composed of individuals varying in age from one to two hundred years with no younger growth represented, it is problematical as to how the species is maintaining itself, how it became established originally, and its future under the present conditions of primeval forest.

In examining carefully two young plants on the ground they at first appeared to be young healthy seedlings which rooted in the sphagnum. After removing them and examining the root system, it was quite evident that they had not arisen from seed, but in all probability were due to "natural cuttings." Callous tissue was formed over the base of each, and the absence of juvenile leaves further strengthened the claim that were not of seedling origin. It is not suggested that this type of reproduction accounts for the maintenance of white cedar over these sites, but these two examples illustrate a rather unusual method which may be followed at times by this species in attempts at survival under perhaps adverse conditions. Reproduction of horticultural varieties of white cedar by cuttings is a common practice in tree nurseries, but insofar as known, the occurrence of natural cuttings of the type described has not been reported for this species.

Acknowledgement is due Dr. H. P. Brown for suggestions in writing the manuscript.

MORE ABOUT LIVING STUMPS

BY W. J. O'NEIL

I have noticed with interest, the statement by different foresters in the JOURNAL concerning the growth of Conifers after the tree has been cut down, that is the growth on the stump, where the bark grows over and forms a scar, covering the entire top of the stump.

* "The Effect of Site on the Structure and Growth of White Cedar (*Thuja occidentalis* L.)." Ecology, Vol. VIII, No. 4, October, 1927.

In a recent issue it stated that a Hemlock has been discovered that grafted its root around an adjoining tree, and covered the stump. This article referred to article by Newins several years ago, in Oregon. The writer was a student under Professor Newins at the time he was making these investigations, and was quite familiar with the specimens he wrote about.

Last winter when building a railroad in Forest County, Wisconsin, the writer discovered a Hemlock stump, approximately ten inches in diameter, that had been cut down, for at least eight years, according to all evidence that was obtainable. The top of this stump was covered over with a new growth, entirely scaled over with bark, and with a green layer underneath. I took an axe and chopped into the top layer, and found that the tree was living, and evidently drawing its nourishment from surrounding trees. Tracing one of the roots, I discovered that it had grafted itself very securely upon the root of an adjoining Hemlock, about thirty feet distant, and from that tree was evidently deriving its nourishment, enabling it to continue to grow.

The location of this Hemlock stump is in the Northwest one fourth, of the Southeast one fourth, Section 24, Township 40 N. Range 13 W., in Forest County, Wisconsin.

The writer in his travels through the woods in the past fifteen years has discovered various stumps that have been cut some years previous, and have continued to grow, although cut down, and wherever he has had the opportunity, has traced their roots and discovered that they have grafted themselves on a similar tree in an adjacent area. It is his conception that there is no question that conifers will graft themselves on adjoining trees, and cover the stump with a new layer of wood.

He has noticed in Oregon and British Columbia, Minnesota and in Wisconsin, samples of trees that, after being cut down, have continued to grow by the method of root-grafting, and he feels that this may be of interest to the society in general, and is sending it to you for what it is worth.

FORESTRY IN THE LUMBER TRADE JOURNALS

BY EMANUEL KRITZ

Twenty years ago the lumber trade journals gave very little notice to forestry. If it was mentioned at all, it was more than likely in a spirit of ridicule of the idealists who engaged in forestry as a cause. The situation is entirely changed. At the present time all the lumber trade journals accept forestry news notes and give it at times considerable space. Outstanding among the trade journals for a continual broad-minded view of forestry and its motives, is the *American Lumberman*. There is hardly an issue that does not carry either an editorial or a news note upon some phase of forestry. In the course of a year the space given to editorials alone makes up a handsome percentage of the total devoted to editorials in general; and, moreover, the spirit of the editorials has always been of a very helpful nature and always provocative of thought by the lumber industry.

In summing up the conditions in the lumber industry for the year 1927, the editor had the following encouraging things to say about forestry:

During the last year forestry from the lumberman's viewpoint has reached a most promising stage. Without ceasing in any true sense to be scientific, forestry has become practical. It no longer means to anybody merely forests withheld from commercial use; it no longer means compulsory tree growing. On the other side, lumbering no longer means denudation without thought of regrowth. Forestry as a science has moved a long way toward industry, and industry has moved just as far toward practical forestry. If the public welfare has demanded that lumbermen shall use more of the tree and leave the land in condition for regrowth, lumbermen have demanded that the public shall make regrowth practical by fire protection and profitable by tax exemption. Also in working out a practical method of reforestation lumbermen have been impelled to change methods of cutting and conversion.

Closely related to the subject of tree growing is wood utilization, a term that comprehends both the conversion of the tree and the use in a commercial way of all the products and byproducts of such conversion. Incidental, therefore, and not to be divorced from the problem of reforestation, is the use of short and odd lengths. As means of effecting such use their specification in house plans, the production of dimension sizes and patterns at the sawmill and the end matching of flooring, ceiling, siding, sliplap and other finished products and their use are well on the way toward becoming general practices in the lumber, the construction and the wood-using industries.

Foresters know, of course, that there is mighty little forestry being practiced on private lands, but the start has been most encouraging. Still more encouraging is the fact that lumbermen, even though they are not practicing forestry, are giving the subject very deep and sincere thought. Doubtless the lumber trade journals have had a very important share in helping mold the changed sentiment.

DR. LARS G. ROMELL APPOINTED CHARLES LATHROP PACK RESEARCH PROFESSOR IN FOREST SOILS

Lars G. Romell, of the Swedish Forest Experiment Station at Stockholm, has been appointed to the Charles Lathrop Pack Research Professorship in Forest Soils at Cornell University and will take up his duties about April 1, 1928. The establishment of this professorship, the first of its kind in an American university, has been made possible by the recently announced endowment of \$130,000 for the chair, together with important additional gifts for its operating funds, from the Charles Lathrop Pack Forestry Trust, founded by Charles Lathrop Pack, of Lakewood, New Jersey. This trust is administered by his son, Captain Arthur Newton Pack, of Princeton, New Jersey. Mr. Pack, in whose name the chair has been endowed, is nationally known for his many years of earnest efforts for the promotion of forestry, and as president and founder of the American Tree Association.

The new investigation will undertake to co-ordinate studies in several fields of science and apply all the obtainable and applicable knowledge to the special problems of forest soils. It will necessarily deal with the chemistry and biology of soils and will also have intimate relation with the study of heredity in tree growth, particularly as that study may help to solve problems of adapting certain varieties to given soils. This is the first time that such a comprehensive research on forest soils has been undertaken in this country.

Professor Romell took his doctor's degree at the University of Stockholm. He is specially trained in the sciences fundamental to his field, including botany, chemistry, physics, mathematics, and bacteriology, his major interests having been in botany and bacteriology in relation to soils and the nutrition of trees. He took special work in botany at the University of Strassburg under Professor Jost, and in botany and cytology at the University of Lund under Professor Lundegardh. He spent nine months recently studying the bacteriology of soils with the renowned Doctor Winogradsky near Paris. Jost, Lundegardh, and Winogradsky are among the outstanding scientists in their fields in Europe.

Since 1918 Doctor Romell has held an appointment at the Swedish Forest Experiment Station in association with Doctor Henrik Hesselman, who is recognized both in Europe and the United States as the outstanding contemporary authority in forest soils. During his connection with the Swedish Forestry Experiment Station he has made many investigations and he is familiar with the various soil researches now going on there. Doctor Romell has also been engaged during two summers as a member of a commission dealing with the practical application of a Swedish law for the protection of the forests in the higher mountains. Therefore he is practically as well as scientifically acquainted with forest matters. The forestry profession welcomes Doctor Romell to its ranks and will afford him every facility to make his work in the new country as fruitful as it was in the old.

FOREST GROWTH IN SWEDEN GREATER THAN IN FINLAND

We are glad to give space to the following statement which corrects the figures given in a note, "Private Forestry in Finland," as prepared in the offices of Price and Pierce, London, and appearing on page 913 of the November JOURNAL.

EDITOR:

In the November issue of JOURNAL OF FORESTRY I observed on page 913 the following sentence: "Sweden has an annual growth in her forests of only 1,267,000,000 cubic feet." The said figure is incorrect and needs correction.

According to the first official report on the present investigations of the Swedish forests made by the government concerning "Noorland," "Dalarna" and "Värmland" and the preliminary figures for the remaining part of the country worked out by the same institution on behalf of the assessment of 1928, the annual increment amounts to:

"Noorland" and "Dalarna"25,767,000 cubic meters= 910,000,000 cubic feet
 "Värmland" 3,350,000 cubic meters= 118,000,000 cubic feet

The remaining part of the

country16,964,000 cubic meters= 599,000,000 cubic feet

Total46,081,000 cubic meters=1,627,000,000 cubic feet

This figure (1,627,000,000 cubic feet) exceeds the above mentioned by about 13 per cent.

The annual increment of the Finnish forests is on the same page (913) stated to be 1,658,000,000 cubic feet. This is probably a printer's error. In the official Finnish report, "The forests of Suomi (Finland). Results of the general survey of the forests of the country carried out during the years 1921-1924," which now lies before me, the increment is given as 44,400,000 cubic meters= 1,568,000,000 cubic feet.

Yours faithfully,

FOLKE JOHANSSON

Assistant Editor

Svenska Skogsvårdsföreningen
Stockholm

INTERNATIONAL GEOGRAPHICAL CONGRESS

An international geographical congress will be held in England during the coming summer under the auspices of the International Geographical Union. There are meetings in London from July 13 to July 16, and at Cambridge from July 17 to July 25, followed by various excursions to various places of interest in the southern part of England.

The congress will be divided into six sections, of which those dealing with physical geography, biological geography, and regional geography will be of chief interest to foresters. Among the subjects which will receive special consideration are: Rural Occupation, The International Map, Pliocene and Pleistocene Terraces, The Variation of Climates, The Flora and Fauna of High Mountains, and The Map of Internal Drainage Areas. Exhibitions are being arranged for the period of the congress. Information as to reductions in fares can be obtained from the Cunard Steamship Company.

It would be desirable for the Society of American Foresters to be officially represented at this congress. If any member of the Society expects to be in a position to attend, I should appreciate it very much if he would let me know so that consideration may be given to his appointment as a delegate.

S. T. DANA, *Chairman*

Committee on International Relations in Forestry

ERRATA

Attention has been called by Mr. Austin Cary to apparent discrepancies in the figures in the tabulations of timber stand in Mr. E. J. Hanzlik's translation, "Estimating of Timber Resources of the Province of Värmland, Sweden," in the April, 1925, issue of the JOURNAL OF FORESTRY.

These discrepancies are due to an error in the heading of the table at the top of page 403, which should be changed to read in cubic *meters* instead of cubic *feet*. This error is one which occurred in the manuscript itself.

The review of T. T. Munger's bulletin, "Timber Growing and Logging Practice in the Douglas Fir Region," which appeared in the December issue of the JOURNAL, 1927, page 1006, should have been credited to Professor Burt P. Kirkland.

SOCIETY AFFAIRS

WARD SHEPARD SUCCUMBS TO EFFICIENCY

The membership has generously dug down into its own pockets in order to provide funds for putting the routine business affairs of this Society on an efficient, businesslike basis. One of the first steps in our progress toward a higher efficiency is to cut down the labor and expense of collecting dues. In the past a considerable percentage of the membership have had to be billed two or three times. Even with the increased funds now provided, the paid personnel will still be on a modest basis and can ill afford to stand the drain in time and money needed for repeated billing.

The new dues went into effect as of January 1, 1928. I personally request and urge every member to sit down and write out a check as soon as he receives his bill. To quote two well-known slogans, "Eventually—why not now?" and "Obey that impulse!"

WARD SHEPARD, *Secretary*

IMPORTANT AMENDMENTS TO CONSTITUTION PASS

The three constitutional amendments relating to dues were passed by a large majority in the recent balloting which closed January 20. The proposal for an entrance fee passed by 560 votes to 96; the proposal to increase dues passed by 565 votes to 92, and the third proposal, concerning the collection of dues, passed by 598 votes to 55.

This means that effective January 1, last, an entrance fee of \$5.00 shall be assessed upon admission to the grade of member and upon admission to the grade of senior member when the candidate has not previously passed through the grade of member; that the annual dues of fellows and senior members shall be \$8.00, of members \$6.00, and of associate members \$5.00. Members elected after July 1 shall be charged half of the annual dues for the year. Dues are payable on January 1, but bills for dues for the current year have been held up pending the outcome of this election. The bills will now go forward and members are requested to pay their dues promptly, in order to avoid the expense of rebilling.

The financial provision made by these amendments will permit the executive officers to put the routine work of the secretary's office on a satisfactory basis of efficiency, much to the satisfaction of everyone concerned. It will also permit the executive officers to devote much more of their available time to the more constructive phases of the Society's work.

The plans for reorganizing the work will be announced in the near future.

WARD SHEPARD, *Secretary*

REPORT OF THE EXECUTIVE COUNCIL

The Executive Council of the Society met at Hotel Sherman, Chicago, Illinois, at 10:30 A.M., November 15, 1927, and remained in session throughout the day.

There were presented to the Council in some detail the major conclusions and recommendations contained in a recently completed report on the relation between forests and the control of the Mississippi River, prepared by E. A. Sherman in behalf of the Forest Service. The Council voted to approve the general conclusions reached in the report as representing the position of the Society of American Foresters. It was also voted to approve the recommendations made, with the understanding that further consideration might indicate desirable modifications in the exact appropriations proposed for various purposes. The Council felt it important that the report should be published and a copy of it sent to every member of the Society at the earliest possible time, and it requested the President to seek an early publication and distribution of it.

Attention of the Council was also given to the present status and needs of forest research in this country, including the relation of education to research, which has been conducted by the forestry committee of the National Academy of Sciences. The President reported that the Society was represented at a meeting of the Academy Committee held in Washington, D.C., on October 7, to discuss specifically the need of fellowships for training men for forest research, at which there was unanimous agreement that such fellowships would help greatly to prepare the right type of man for the thorough-going research so greatly needed in practically every phase of forestry. It was reported that subsequent to this meeting the forestry committee presented a report which was accepted by the National Academy of Sciences, expressing approval of (1) the encouragement, if possible, with substantially increased financial support, of researches in fields of science basic to forestry, e.g., plant physiology, morphology, genetics, pathology and entomology; (2) the establishment of a special research organization or institute of which the activities should center about such researches; (3) the creation of research fellowships in forestry. The President reported that at the suggestion of the Academy Committee he had appointed a committee consisting of R. Y. Stuart, Chairman, E. H. Clapp, S. T. Dana, R. S. Hosmer, D. T. Mason, Barrington Moore, and Ward Shepard, to co-operate with the Academy Committee, and particularly with Colonel Graves and Professor I. W. Bailey as its representatives, in giving further consideration to the matters covered in the committee report and especially to the details involved in the creation of forestry research fellowships. This committee, in consultation with Dean Graves and Professor Bailey, has prepared tentative plans both for the establishment of forestry research fellowships and for a comprehensive survey of forest education. The plan for fellowships provides opportunity for training for work in forest economics, and forest and wood utilization, as well as in the basic biological and physical sciences on which forest practices must be based. The Executive Council expressed its approval of the general objects aimed at in both plans, including specifically the inclusion of forest economics in the fellowship program and also the proposed survey of forest education.

The President reported on the present status of the McSweeney Bill introduced in the last session of Congress which virtually embodies the recommendations for a national program of federal forest research contained in the report of the special committee of the Washington Section of the Society on forest

research. The Council voted to endorse the Bill and to urge all members of the Society to do what they can to insure its passage.

The President reported his attendance at a recent meeting called by the National Conference on Outdoor Recreation to consider the Garrett-Hawes Bill introduced at the last session of Congress, providing for a federal Department of Conservation. The Conference appointed a committee to consider the permanence of the National Conference on Outdoor Recreation, particularly with reference to its authority and availability in acting as an adviser to the various federal conservation agencies in order to bring about the co-ordination of effort contemplated by the Garrett-Hawes Bill.

The Council discussed quite fully the problem of Society finances. The President reported an increase in interest in Society affairs in many quarters, a growing realization of the Society's opportunities, and of the need for more adequate financial support. He cited as partial evidence of this increase in interest, the action of the New York Section in 1925, in offering to contribute \$100 to the Society for the employment of a full-time executive secretary, and to its action in 1927 in raising its local dues from \$2.00 to \$10.00 a year in order to turn over the surplus raised in this way to the parent Society for the same purpose. He reported also the action of the Washington Section in increasing its local dues from \$2.00 to \$5.00 a year for the same purpose. The Executive Council voted to record its deep appreciation of the action of the New York and the Washington Sections.

After careful consideration the Council concluded that additional clerical assistance is essential for the effective conduct of the Society's routine business, and that this additional assistance can be financed only by increased revenues. In view of this situation and of the growing interest in Society affairs on the part of the membership generally, it was decided to take another ballot on increased dues, it being understood that the ballot will propose replacing the present Article X of the constitution on dues by the three sections of the proposed Article V on dues as stated on page 751 of the October, 1927, issue of the JOURNAL OF FORESTRY. The need for greater financial support is so urgent that the Council felt entirely justified in asking for a ballot on this particular article of the proposed constitution prior to a ballot on the other articles. The secretary of the Society was accordingly requested to issue the ballot on dues and to include in the ballot a proviso, making the new dues and the proposed initiation fee of \$5.00 for Members effective on January 1, 1928. In taking this action the Council wished to have it distinctly understood that the proposed increase in dues, even if approved, will not make possible the employment of a full-time executive secretary such as has been discussed, and also that it still believes the employment of such a secretary to be essential for the Society to take full advantage of its opportunities to serve the profession. The Council decided that if the proposed increase in dues is approved, those who have previously made voluntary pledges of five-year contributions should be released from their pledges.

The Council authorized continued annual contributions of \$50.00 each for 1928 to the National Conference on Outdoor Recreation and to the American Forest Week Committee. The treasurer was also authorized to use an additional

\$50.00 of Society funds for the mailing of further copies of the report on forest research by the Washington Section of the Society.

The committee on the revision of the constitution was asked to give further consideration to the matter of membership requirements. In view of the apparently general opposition to the change in the name of the present grade of Member to that of Junior Member, the Council decided to recommend the retention of the term "Member" in the proposed constitution.

Consideration was given to the request of the Schlich Memorial Fund Committee for suggestions as to the form which the memorial should take. The Council felt that the proposal to establish a fellowship for the study of forestry at Oxford, which would be awarded in rotation to residents of England, the British Dominions and Colonies, and the United States, is eminently satisfactory. In reply to the specific questions raised by the committee the Council expressed the view, (1) that the scholarship should be open only to graduates in forestry; (2) that the method of rotation suggested is satisfactory and particularly generous to the United States; (3) that the Society will, if desired, gladly undertake, when it is the turn of the United States to be represented, to select a suitable list of candidates from which final selection may be made by the Schlich Fund Committee.

Professor Hesselman's formal letter of thanks to the President of the Society for his recent trip to the United States was read and received with much satisfaction. The President was requested to prepare a suitable reply to Professor Hesselman's letter, and also to express to the International Education Board, the Society's appreciation of its action in making possible Professor Hesselman's visit.

Various criticisms which were made of the JOURNAL OF FORESTRY were considered and it was felt that many of them are not justified. The Council feels that the JOURNAL is something of which the Society can justly be proud, and voted to express its appreciation of Mr. Zon's handling of the publication.

Mr. Peters called attention to the proposal of many members in the southern states to establish three Sections of the Society in the South. One of these would include the states of Louisiana, Mississippi, Texas and southern Arkansas; the second would include northern Arkansas, Oklahoma, Missouri and probably western Tennessee; and the third would include Alabama, Georgia, Florida and South Carolina. The Council expressed tentative approval of this proposed organization of the southern Sections, provided it is, in general, satisfactory to the members of the Society in the territory concerned and the necessary formal petitions for their establishment are received. The proposal to establish a separate section in the Inland Empire was considered and the position taken that the Council would be glad to give careful consideration to any petition requesting the establishment of such a Section.

ALDO LEOPOLD
T. T. MUNGER
J. G. PETERS

E. H. FROTHINGHAM
S. T. DANA
S. B. DETWEILER
RAPHAEL ZON

J. H. FAHRENBACH
R. T. FISCHER
R. Y. STUART

A RANGE MANAGEMENT DIVISION FOR THE SOCIETY*

Mr. President and fellow members of the Society of American Foresters:

A number of the men engaged in range management have for some time been considering the formation of an organization to deal more specifically with their specialty than does the Society of American Foresters at present. The object of this organization would be to promote interest in and further the science and practice of range management. After due consideration the committee selected to work on this matter has reached the conclusion that the proper place for the range management organization is within the Society of American Foresters as a branch or division, providing the Society welcomes and makes provision for such an arrangement. I have been requested by the committee to present the proposition in this meeting.

Whatever may have been the earlier conception of technical forestry, technical forestry in this country has come to involve the management and protection of all the natural resources occurring on forest lands be they timber, water resources, fish and game, or outdoor recreation. It has even gone further to deal with the problem of forest economics, the utilization of forest products and in fact practically every phase that has to do with the management of forest land and the use of its products. This has necessarily given rise to the development of special lines of work and specialists to deal with them. Thus, in addition to the straight forester we now have range specialists, forest engineers, forest economists, workers in forest wild life, forest entomologists and so on down the line. The range of activities of many individual members of the Society extends into these several fields. Naturally the professional interests of these men embrace a much wider field than the profession of forestry in the restricted sense that it deals only with growing and harvesting of timber. The Society, regardless of what may have been its prime purpose at the outset has attempted to deal more or less with these various phases but naturally has given greater emphasis to what might be called pure forestry with the outcome that the men engaged in the related lines do not have the opportunity they would like to have for exchange of ideas and such other advantages as organization might afford in their particular line of work. It should be possible to meet the needs of these groups by the organization of divisions within the Society as needed.

The alternative for those men seeking organization for their special professional interests, lies outside the Society by establishing a separate society, or affiliation with some one of the several other societies in the respective professions. For example, a Forest Entomologist, if I may use the illustration, would find much of interest to him in the Entomological Society and may become a member of that Society. Even there he might not find as much attention and thought devoted to his special field as he would like unless that society afforded a division of Forest Entomologists. But would it not mean more to the profession of forestry if that division were provided for in the Society of American Foresters? It seems desirable that all of the several activities which have a close

* Statement made before the annual meeting of the Society of American Foresters, December, 1927, San Francisco.

bearing upon the science and art of forestry should be closely correlated with the primary conception of the purpose of the Society of American Foresters, not only from the standpoint of promoting better forestry practice, but also from the standpoint of broadening the program of the Society so as to encompass the professional interests of a large section of its membership. It is not desirable to have the interests of the forestry profession divided between two or more organizations neither of which fully meets the needs.

In fact, the Society might well contemplate a rôle wherein it would take the leadership in a large program of forest and watershed land conservation; be, as it were, a mother organization to a group of sub-organizations that should be closely affiliated with but to a certain extent subordinated to the needs of forestry in the narrower sense. Such a policy should not weaken the central purpose of the present Society, but should actually greatly broaden and strengthen it. The addition of a considerable number of grazing men immediately, and other groups whose field of activities is closely allied to forestry, as conditions may warrant, would directly strengthen the Society. The interest and influence of this larger body of scientific men, all with the broader conception of forestry at heart, would be a potential factor in enabling the Society to accomplish a larger program.

It is not intended that a broadened scope of the Society of American Foresters should supplant other societies in any way. A special division in it undoubtedly would not meet all of the needs of the range management man, the ecologist or the entomologist and the others. These men would probably still wish to affiliate with the organizations in their special field. Rather, the object of the division is to provide in the Society of American Foresters the place where the special phases relating to forestry may be cared for.

This suggestion is not intended in any way as a criticism of the past policy of the Society. When it was first organized there were only a few foresters in this country and they were interested primarily in pure forestry. Special phases had been little more than thought of as possibilities for future development. With the growth of forestry, however, more and more of these specialists have come into the field. The Society has always welcomed contributions from these men in both its meetings and in the *JOURNAL*. But, so far as the range management men are concerned, and I speak only for them, they feel that their profession as well as number engaged in it has grown to a point where they can better serve the profession of forestry as well as that of range management if special provision is made for them.

To meet the need as outlined would require a liberalization of the policies of the Society and naturally some modification of its constitution and by-laws. A discussion of the details involved would require more time than is available here and I doubt if they have been fully determined. However, I wish to mention what occurs to me as some of the main points involved. These are as follows:

1. Provision in the membership requirements of the Society of American Foresters for the election to membership of graduates of accredited schools in courses preparing them for range management work immediately upon their entrance into such work on forest lands.

Under the present or proposed constitution a man engaged in range manage-

ment and who does not have a degree in forestry cannot become a member of the Society until he has had the required years of experience. A man with schooling in range management equivalent to that of a graduate forester should be eligible to membership as soon as he becomes engaged in work on forest lands.

2. The setting up of divisional membership requirements equivalent to those for the Society as a whole except for the provision that a man be trained in or engaged in range management work.

A member of the Society having these requirements would then be eligible to full membership in the Range Management division as well as in the main Society. Members of the Range Management division who are not eligible to the main Society would have full voice in the Range Management division and have the privilege of attending meetings, presenting papers and taking part in the discussions but not to vote in the main Society.

3. Provision for a chairman and small advisory committee for the division.

4. Provision for meeting the expenses incident to the increased membership and expanded program of the Society.

5. Provision for a certain amount of space in the JOURNAL for range management material.

6. Provision in the program of the annual meeting for papers on range management or for a divisional program for part of the time co-ordinated with the general program of the meeting.

7. Provision for a voice in the council of the main Society, at least on all matters relating to range management.

Just how the formation of the division may be carried out is not so important right now. What is desired is the consideration of the proposition by the Council and members of the Society in order that a decision one way or another may be arrived at in due time. The details can be worked out when the general plan has been approved.

C. L. FORSLING

REPORT OF THE SECRETARY FOR THE YEAR 1927

Due largely to unforeseen circumstances, the past year has been rather disappointing in the way of accomplishment and advancement of Society affairs from the standpoint of your Secretary. At the beginning of the year the official duties of the Secretary necessitated his absence from Washington for practically two months, during which time your retiring Secretary, Mr. G. H. Collingwood, continued in office. Thanks are due Mr. Collingwood for his co-operation. Your Secretary did not assume the duties of his office until March 1. Mr. Elmer R. Hodson continued to serve as Executive Secretary until April 30. During the prior administration it became evident that the person filling the office of Executive Secretary should have stenographic ability, in order that routine correspondence might be handled without referring it to some officer of the Society for reply. The finances of the Society were such that it was impossible to consider the employment of stenographic assistance in addition to the Executive Secretary, who lacked such experience and ability. Therefore, Miss G. Fay Price, who is a stenographer and had prior training and experience in secretarial work, was given temporary employment on March 21. Her appointment was made effective

prior to the termination of Mr. Hodson's appointment in order that she might have the benefit of his experience acquired during his term of office, which covered a period of approximately two years. With this end in view Mr. Hodson co-operated to the fullest extent. Miss Price was doing nicely with the work, but owing to illness, was obliged to resign on July 10. Her resignation came unexpectedly at a time when none of the officers nor members of the Executive Council were in Washington, their official duties requiring that they be absent. This was extremely unfortunate because the status of much of the work was known only by her and she was unable to explain the details of the work to her successor prior to leaving Washington. Furthermore, her physical condition for a month prior to her resignation was such that she could not give the work her undivided attention and this fact was responsible for a number of errors in the accounts and records which later caused difficulty and delay in adjusting. Since the person occupying this position must be an assistant to both the Secretary and Treasurer, it is necessary that she be not only a stenographer but a bookkeeper. Miss Price was taught the bookkeeping system largely by Mr. Chandler after she came on the job, but because Mr. Chandler who devised the system now in use was also about to leave town, it was necessary to get someone who already knew accounting. One advantage of having a system which conforms to standard accounting practice is that it is possible to find an individual who can take it over with little or no special instructions. After canvassing the field Mrs. M. C. James was given probational appointment on August 15 and she has continued to serve up to the present time. Mrs. James assumed the duties of her office under an enormous handicap because she did not have the benefit of her predecessor's instructions acquired during her term of office. This was responsible for delays and naturally resulted in some errors. Mrs. James is thoroughly qualified by training and experience to occupy this position and has demonstrated to the satisfaction of the local officers of the Society that the work has been efficiently handled in a trying and difficult situation.

During the interval between the resignation of Miss Price and the employment of Mrs. James there was a considerable accumulation of mail, some of which did not receive attention before September 15 due to the absence from Washington of the officers of the Society. Until such time as a paid Secretary is employed a similar situation is likely to develop and the likelihood is increased whenever most of the officers are non-residents of Washington. Therefore, it is not difficult to see the urgent need for a paid Secretary, especially since the officers of the Society, even though located in Washington, will in almost every case always have other work which claims priority.

During the year the obsolete Montague System of keeping the names and addresses of the Society membership was replaced by an up-to-date addressograph system. This was made the subject of a special report. Many of the changes as outlined in this report have already been made but others still remain to be done and it is recommended that these changes be made just as rapidly as time and funds will permit. Special mention should be made of the work done in this connection by Mr. Fivaz, who was a member of this Committee.

Your President has performed much work which should have been done by a paid Secretary. The President and other members of the Council are so ham-

pered through the handling of routine matters that might be done by a paid Secretary that the growth of the Society is retarded. It is hoped that favorable action will result on the proposed amendment to the constitution which was recently sent to the Members, Senior Members and Fellows for consideration. The proposed increase will to a certain extent not only relieve the President of much of this work but will considerably strengthen our organization.

As required by the constitution, the Secretary announces the results of the election of officers for the ensuing year as follows:

For President.....	R. T. Fisher
For Vice-President.....	O. M. Butler
For Secretary.....	Ward Shepard
For Treasurer.....	S. B. Detwiler
For Council.....	R. Y. Stuart

During the year the Society has lost by death five members:

<i>Name</i>	<i>Grade</i>
B. W. Clark	Member
C. R. Pettis	Senior Member
G. B. Sudworth	Member
C. D. Walcott	Honorary
W. S. Webb	Associate

Four Members and one Senior Member, or a total of five, have resigned, while twenty-four Members and four Senior Members have been dropped for non-payment of dues. The membership now consists of 8 Fellows, 538 Senior Members, 688 Members, 76 Associate Members, 5 Honorary Members, and 7 Corresponding Members, making a total of 1,322 in all classes.

J. H. FAHRENBACH, *Secretary*

January 3, 1928

REPORT OF THE TREASURER FOR THE YEAR 1927

The total income for 1927 was approximately \$200 less than the total income for 1926, due mainly to slow payment of dues. On December 31, 49 senior members and 102 junior members had not yet paid their dues for 1927, although these members had been billed three times during the year. Members can aid the Society's work very greatly if they will pay their dues promptly. There is a waste of time, energy and postage involved in repeatedly billing members that should be put to more constructive use. I believe members whose dues have not been paid by April 1 should not receive the JOURNAL until their dues are paid, and that 25c additional should be assessed to pay for the extra postage and labor involved in sending the numbers of the JOURNAL which are with-held.

The regular income of the Society (dues, subscriptions, sales of JOURNALS, advertising and interest) was \$540 less than last year because of unpaid dues, a decrease in sales of JOURNALS and falling off in advertising revenue. The contributions from members was approximately \$150 greater in 1927 than in 1926. Of the \$955.35 contributed, the New York section gave \$100, and the balance

was given by 160 members. It is significant to note on the accompanying list of contributors (exhibit D) the junior members are well represented on the list. The generous contributions from the membership in 1926 and 1927 has given the Society a working capital to carry out the constructive program of development outlined by the Council in 1925. The Council deeply appreciates the support thus given and extends its thanks to the contributors.

Advertising in the JOURNAL should be a source of greater income than it is at present. The rates appear to be unduly high and no adequate effort has been made to secure new business and handle accounts in a satisfactory manner. We need an advertising manager experienced in this phase of the Society's business.

The Society and its activities are growing rapidly and the business of the Society involves a large volume of work. Proper conduct of such work has been severely handicapped by lack of proper office space and facilities. This results in lost motion and delays. Our present space consists of about ten square feet in one corner of an office occupied by others. Our equipment consists of a table, antiquated card files, and an addressograph stencil file. All of the letter files are two floors below because there is no room for them in the office. It will be real economy to rent an office and install modern equipment. Thanks are due to the committee, headed by J. H. Fahrenbach, which remodeled our addressograph files in a manner which greatly facilitates the work of the Treasurer's office. The Treasurer also acknowledges the very valuable assistance given to him in the conduct of his work by Messrs. B. A. Chandler, A. E. Fivaz and Carlos Bates.

The Budget (exhibit C) for 1928 is submitted with the expectation that the dues of the Society will be increased as a result of the vote now in progress. On a conservative basis, there should be sufficient funds available to employ a paid Secretary and a stenographer-clerk. The Budget does not provide increased funds for publication of the JOURNAL. Mr. Zon states that the minimum amount required for the JOURNAL in 1928 is \$6,300, but that desirable development of the JOURNAL requires an additional \$1,200 for the year. I have assumed that the need for a paid secretary is paramount at this time to all other needs. I have estimated no increase in JOURNAL subscriptions, but I believe this is a fertile field for additional revenue. The estimated increase in advertising income is probably under the mark, if a capable advertising manager is appointed to build up this part of our business.

A considerable part of the Society's surplus funds is represented by back numbers of PROCEEDINGS, QUARTERLIES and JOURNALS in stock. This is a very valuable asset of the Society. At the present time, there are two orders for complete sets of back numbers which have not been filled pending the taking of a stock record. This record is now complete and shows that the Society should provide a larger number of reserve copies of publication in the future. Many numbers, including some of the more recent issues of the JOURNAL, are exhausted or nearly so, as shown by the following statement:

PUBLICATIONS IN STOCK

	<i>Proceedings</i>	<i>Quarterlies</i>	<i>JOURNALS</i>
Exhausted issues	1	1	0
1-9 copies of issue in stock.....	4	6	5

	Proceedings	Quantities	Journals
10-24 copies of issue in stock	2	2	3
25-49 copies of issue in stock	2	7	18
50-99 copies of issue in stock.....	6	20	27
Over 100 copies of issues in stock	13	20	36
	<hr/>	<hr/>	<hr/>
Total of numbers issued	28	56	89

The record-keeping system of the Society has been simplified by adapting to our use the book-keeping methods used in the business office of the American Association for the Advancement of Science. Under this system less work is required to keep the books than heretofore. The financial statement for 1927 consists of a balance sheet (exhibit A) and a statement of income and expenses (exhibit B). The statement in former years consisted of a balance sheet and a statement of receipts and disbursements prepared from the cash book. The method of accounting previously used is satisfactory for an organization which receives and disburses cash but holds no other assets, and whose business is completely closed at the end of each year except for cash carried forward as cash on hand. Your Treasurer is confident that the present form of statement so clearly reflects the financial status of the Society that it will be accepted by all as more satisfactory than the form used in previous years.

In conclusion, I wish to express my appreciation of the honor of being elected treasurer for three successive years. I value this evidence that I am considered worthy of serving the Society in this responsible position. I have given much thought and effort to this work, but it has been difficult to serve well under the existing conditions of Society finances. I had no expectation nor knowledge of being re-nominated for the position in 1928 and I feel that I have served my time. I believe that some new officers should be elected each year, and thus develop a larger number of members who have detailed knowledge of Society affairs and aims. I am, therefore, requesting the President of the Society to replace me on the Council as soon as possible, and appoint someone to serve in my place. I have suggested Mr. B. A. Chandler as one who is qualified for the position and thoroughly familiar with the duties of the office.

S. B. DETWILER, *Treasurer*

SOCIETY OF AMERICAN FORESTERS

Balance Sheet, December 31, 1927

ASSETS

Cash in Bank		\$ 5,091.71
Current Fund:		
U. S. Treasury Gold Bond 4½s Due 1932-47.....	\$ 500.00	
U. S. Treasury Gold Bond 4½s Due 1947-52.....	500.00	1,000.00
Permanent Fund:		
First Mortgage Real Estate Note 6½s Due 5-3-1928....	1,000.00	
Deposit in Equitable Co-Operative Building Association	1,623.50	
Accrued interest in bank	133.43	2,756.93
	<hr/>	<hr/>

Back numbers of publications in stock:

Reprints		
Proceedings		
Forestry Quarterly		
JOURNAL OF FORESTRY		5,043.70
Office Equipment		229.70
Accrued Interest:		
On current fund	5.30	
On checking account	85.18	90.48
		<hr/>
		14,212.52

LIABILITIES

Accounts Payable		552.11
Dues paid in advance		139.00
Subscriptions paid in advance		91.00
Surplus:		
Brought forward from preceding year	12,206.76	
For current year	1,223.65	13,430.41
		<hr/>
		\$14,212.52

SOCIETY OF AMERICAN FORESTERS

STATEMENT OF INCOME AND EXPENSE
For Year Ending December 31, 1927

INCOME

Dues for year 1925	\$ 11.00	
Dues for year 1926	94.45	
Dues for year 1927	4,724.95	\$4,830.40
	<hr/>	
Subscriptions paid in 1926	480.50	
Subscriptions paid in 1927	2,545.61	3,026.11
	<hr/>	
Sales of JOURNALS	55.53	
Advertising	356.12	
Interest	271.65	
Contributions	955.35	
Adjustment to inventory of Journals, etc., in stock at beginning of year.....	196.20	
	<hr/>	
Total Income		\$9,691.36

EXPENSES

Printing and mailing JOURNAL.....		5,210.74
Washington Office:		
Salaries	1,544.35	
Clerical assistance	168.51	
Stationery and postage	307.04	
General expenses	99.37	
Miscellaneous printing	139.70	2,258.97
<hr/>		
Other expenses:		
National Program Forest Research	139.66	
American Forest Week Committee	50.00	
National Conference on Outdoor Recreation	50.00	
Commissions and Exchange	28.11	
Traveling expenses	105.28	373.05
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Old addressograph charged off as obsolete.		80.00
Accounts payable:		
Printing JOURNAL	523.95	
Taking inventory end year	21.00	544.95
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Total deductions from income		\$ 8,467.71
<hr/>		
Surplus, December 31, 1927		\$ 1,223.65
Supplemental Account of Funds Admin- istered by the Society of American For- esters. Internat'l Ed. Board.....	\$ 1,963.30	\$ 1,963.30
(Dr. H. Hesselman's Forestry Tour)		

ESTIMATED RECEIPTS, 1928

Annual dues		
546 senior members and fellows @ \$8.00.....	\$4,368.00	
688 members @ \$6.00.....	4,128.00	
76 associate members @ \$5.00.....	380.00	8,876.00
<hr/>		
Subscriptions to JOURNAL		
650 subscribers @ \$4.00	2,600.00	
100 subscribers @ \$3.50	350.00	
20 subscribers @ \$2.50	50.00	3,000.00
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Sale of old JOURNALS	150.00
Advertising	500.00
Interest	300.00
Miscellaneous	100.00
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Total	\$12,926.00

ESTIMATED EXPENDITURES, 1928

JOURNAL OF FORESTRY.....	\$ 6,300.00
Business office expenses	
Executive officer	3,000.00
Clerical assistance	1,500.00
Office rental	300.00
Office furniture and equipment	376.00
Miscellaneous printing	250.00
Stationery and postage	500.00
Telegrams, express, etc.	100.00
Travel	100.00
Contributions to other organizations	100.00
Miscellaneous	400.00
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Total	\$12,926.00

List of Contributors to the Finances of the Society—1927

Fred B. Agee	Thomas H. Gill	J. G. Peters
Shirley W. Allen	B. L. Grondal	Roy G. Pierce
W. M. Baker	I. T. Haig	A. K. Proell
Kenneth E. Barraclough	Thomas Harbeson	H. L. Russell
Swift Berry	G. C. Hawkins	A. H. Sylvester
J. M. Briscoe	Roy Headley	Perley Spaulding
R. C. Bryant	R. L. Hogue	R. C. Staebner
P. L. Butterick	C. D. Howe	Hugo L. Sundling
H. H. Chapman	Leonard F. Kellogg	Fred B. Trenk
E. H. Clapp	H. Henry Knowles	Wash. Loan & Trust Co.
G. H. Collingwood	Francis Kieffer	Alfred Akerman
Leonidas Coyle	N. F. Macduff	W. B. Apgar
William Crosby	E. R. McKee	W. L. Baldwin
James E. Davis	Robert Marshall	C. G. Bates
S. B. Detwiler	F. G. Miller	F. W. Besley
Lynn H. Douglas	H. C. Mitchell	E. M. Bruner
E. C. Filler	F. W. Morrell	C. H. Burrage
A. E. Fivaz	L. S. Murphy	Nathan B. Canterbury
J. H. Foster	Linus C. Palmer	Elias T. Clark
E. H. Frothingham	W. F. Peel	F. W. Cleator

David B. Cook
 George A. Cromie
 W. J. Damtoft
 C. A. DeLong
 R. L. Deering
 W. O. Filley
 R. D. Forbes
 Emanuel Fritz
 J. L. Goodwin
 G. B. Gordon
 R. C. Hall
 Ralph S. Hosmer
 L. F. Hawley
 H. W. Hicock
 J. S. Holmes
 G. W. Hult
 Gerhard Kempff
 A. Koroleff
 F. C. Krell
 W. B. McMillan
 D. T. Mason
 R. B. Miller
 Barrington Moore
 Paul H. Mulford
 J. M. Nelson, Jr.
 L. J. Palmer
 Karl F. Pfeiffer
 Gifford Pinchot
 A. F. Potter
 J. F. Preston
 R. E. Randall
 B. Sanford
 H. J. Schauche, Jr.

Ralph A. Sheals
 Harry F. Smith
 Howard R. Spelman
 J. W. Stokes
 R. Y. Stuart
 Willis W. Wagener
 C. R. Tillotson
 Ovid A. Alderman
 H. L. Baker
 S. Duval Anderson
 Louis A. Barrett
 C. E. Behre
 James H. Billingslea
 Sidney S. Burton
 E. S. Bryant
 B. A. Chandler
 Robert E. Clark
 Francis E. Cobb
 A. C. Cline
 Phillip T. Coolidge
 C. P. Cronk
 S. T. Dana
 E. L. Demmon
 W. J. Endersbee
 Arthur F. Fischer
 C. L. Forsling
 E. W. Gemmer
 Henry S. Graves
 R. U. Harmon
 A. G. Hauge
 R. C. Hawley
 E. C. Hirst
 W. G. Howard

Clayton F. Jones
 N. T. Kessler
 C. F. Korstian
 Clyde Leavitt
 E. F. McCarthy
 E. C. Mandenberg
 Melvin L. Merritt
 Thornton T. Munger
 Walter M. Moore
 Edward N. Munns
 New York Section S.A.F.
 L. A. Mix
 G. A. Pearson
 Otto W. Pflueger
 J. H. Price
 A. C. Ringland
 Smith Riley
 C. A. Schenck
 E. A. Sherman
 H. A. Smith
 Carl M. Stevens
 A. J. Streinz
 Reginal T. Titus
 C. P. Wilbur
 Stanley F. Wilson
 Robert Wilson
 Alvin G. Whitney
 Raymond B. Winter
 William E. Wright
 Ellswood Wilson
 K. W. Woodward
 E. A. Ziegler

REPORT OF THE MEETINGS COMMITTEE FOR THE YEAR 1927

The Meetings Committee hereby submits its report for the year 1927 in response to the request of the Executive Secretary dated October 28. Of necessity the work of this committee has been conducted largely by correspondence and this report is being made by the Chairman without reference to the other members to avoid delay. Messrs. Kotok and Munger had two opportunities to meet during the early fall, one by special arrangement to attend to the duties of this committee. The activities of the committee are best recorded by submitting a copy of the program of the annual meeting, which is attached. Early in the summer this committee recommended San Francisco as the meeting place for the annual meeting and subsequently selected the date. Since then it has

been occupied with deciding upon the subjects to be discussed and securing the speakers best qualified to present these topics.

Much of the responsibility for arranging for the meeting has rested with the San Francisco member of the committee, Mr. Kotok, and with the local committee of the California Section, the Chairman of which is Dr. Meinecke; credit and thanks are due them.

To avoid the uncertainty, delay, and necessity for much correspondence which this committee encountered this year, it is suggested that hereafter the practice be adopted of deciding upon the meeting place of the next annual meeting at each annual meeting. This is a matter which might well be decided long in advance and while a large group of members are assembled. I, therefore, submit that suggestion for the consideration of the Executive Council.

Membership Committee

E. I. KOTOK

PAUL D. KELLETER

T. T. MUNGER, Chr.

REPORT OF COMMITTEE ON REVISION OF THE CONSTITUTION

The report submitted by the Committee at last winter's meeting of the Society was acted upon, Section by Section, at the meeting of the Council and was further discussed in the general sessions. The report in the form approved was later returned to the Committee with instructions to put it in form for publication. As thus prepared, the report was again sent to the President, on April 7, for the final approval. It was returned in May and promptly forwarded to the JOURNAL, but too late to be included in the May issue. The report appeared in the October number of the JOURNAL.

The hope that the proposed revisions could be brought before the Society for action this year, so as to be effective next year, was frustrated by the lateness of publication. The publication in the JOURNAL was designed to stimulate informal criticism which might lead to further changes more acceptable to the Society as a whole. As yet (November 8) very little criticism has been received. On October 20, President Stuart wrote to the Sections of the Society calling attention to the published report and inviting discussion at Section meetings. It is understood that one Section has already complied with this request, though its comments have not yet been received.

The Committee now recommends:

1. That final action be held open until after the annual meeting of the Society at San Francisco.
2. That the proposed revisions be considered a major matter of business in the programs both of the meeting of the Executive Council and of the Society.
3. That further attention by the Sections be invited and that, if necessary in order to obtain suggestions from more of the Sections, final ballot be postponed until May or June of next year.
4. That all recommendations as to changes in the present draft of the proposed revisions be returned to the Committee with such directions as the Council may see fit to give; and that the revisions, when in form for ballot, shall be

returned to the Council for final action by its own members and for submission to the Society.

5. That interpretations of the Constitution and detailed procedure under the provisions of the Constitution as adopted be incorporated in by-laws by the Committee, following the adoption of the revised Constitution by the Society, and subject to final approval by the Executive Council.

E. H. FROTHINGHAM, *Chairman*

REPORT ON INDUSTRIAL FORESTRY SURVEY

About a year and a half ago, The American Forestry Association agreed to receive and compile the material collected by the Society of American Foresters on a survey of commercial forestry practice in the United States. The general plan was to have each section of the Society cover its own territory and report briefly on the efforts of lumber and paper companies and other large timberland holders. To date material has come in from six sections and two sections have indicated that there was practically nothing to report. We have still to hear from the New England Section, the Wisconsin Section, the Minnesota Section, Southern Appalachian Section, Northern Pacific Section and the Northern Rocky Mountain Section.

The California Section's report is unusually complete, covering ten redwood companies and nine pine outfits. So far as the reports indicate, California employs more foresters than any other section.

The report of the Ohio Valley Section covers only two small tracts and it is expected that a further report will come in.

Obviously, no report of industrial forestry practice can be received from the Washington (D.C.) Section, although it is reasonable to expect the members of this section to contribute to reports of other sections on account of their opportunity for travel and observation. Also there is practically no commercial forestry activity in the Intermountain, Central Rocky Mountain or Southwestern Sections' territory. On the other hand, there should be much to report from the following sections: Wisconsin, Minnesota, Northern Rocky Mountain, Northern Pacific and Southern Appalachian. The general plan followed has been to secure questionnaire answers. It is not satisfactory to have the companies concerned fill out these questionnaires as it is possible that the information would be unduly colored from the company's standpoint.

The Gulf States Section has used the following form of questionnaire:

1. Name and address of owner.
2. Location and extent of area. General character of the forest (types, old growth, extent to which burned, etc.)
3. General purpose of management.
4. What has been and is being done along such lines as—
 - a. Fire control
 - b. Insect or disease control
 - c. Slash disposal
 - d. Adoption of methods of cutting to secure satisfactory natural reproduction.

- e. Cleanings and thinnings.
 - f. Area already planted or on which planting is planned in the future, including information as to the size and output of any nurseries.
 - g. Steps adopted toward securing sustained periodical or annual yield.
 - h. Efforts at close utilization.
 - i. Employment of foresters, including number, duties, etc.
 - j. Technical assistance received from other sources, if any, with information as to its extent and character.
- 5. Costs.
 - 6. Returns.
 - 7. Plans for the future.

Reports have been received from this section on twenty-one companies. These reports supplemented by additional information from Austin Cary indicate that several million acres in the south are under more or less intensive forest management.

The New York Section has recently sent in reports on forty tracts varying from seventy-nine acres to two hundred and twenty-five thousand acres. It is interesting that the most intensive forestry practice is probably under way on the largest tracts.

If I were to make a suggestion as to full progress of the survey, I would suggest that more individual effort be exerted by the members of each section to secure accurate information using the questionnaire as a guide. This is easier said than done, because we are all busy, but nothing like a complete report can be made until greater effort is put forth by the section members.

It is hoped that the Society as a whole will approve the recent action in allowing the Chamber of Commerce of the United States to have access to our records as a means of working up the Chicago Forestry Conference. Whether or not the Chamber decides to give the Society credit for its co-operation, it seemed a duty on our part to contribute such help as we could to make this conference a success. President Stuart can explain our participation since he was selected as a member of the general committee.

S. W. ALLEN

REPORT OF THE COMMITTEE ON INTERNATIONAL RELATIONS IN FORESTRY

The committee took the initiative in arranging for a trip to this country by Professor Henrik Hesselman, director of the Swedish Forest Experiment Station. At the request of a number of interested organizations, the International Education Board provided the necessary funds to enable Professor Hesselman to visit various forest experiment stations and forest schools following the International Congress of Soil Science at Washington, which he attended as an official delegate of the Swedish government. Professor Hesselman was interested in becoming familiar with forest conditions and forest problems in different parts of the country, and particularly with the scope and with the scope and character of forest research. Special attention was paid by him to problems in the field of forest soils, in which he himself is one of the leading investigators in Europe.

His advice in analyzing the specific soil problems by which foresters are faced in different parts of the United States and in suggesting means of attack upon them, proved to be of the greatest value to all with whom he came in contact. His visit was also most stimulating in other ways and unquestionably contributed greatly to the establishment of closer personal and professional relations between the foresters of Sweden and America.

We have also been fortunate during the past year in having visits from a number of other European foresters and persons interested in the utilization of forest products, including representatives of Sweden, Finland, Denmark, Germany, Poland, Roumania, India, and South Africa. Special mention should, perhaps, be made of the visit of several months by Professor Yrjö Ilvessalo, head of the Division of Forest Management in the Forest Research Institute of Finland. Professor Ilvessalo is well known in this country for his comprehensive survey of the forests of Finland and for his work in various phases of forest mensuration. He met a large number of American foresters, all of whom profited greatly from the contact. There can be no question but that visits of this sort, and similar visits from American foresters to other countries, do much to bring about a far more effective interchange of ideas and experiences than is possible by correspondence, and thereby advance the profession.

Aside from its participation in bringing Professor Hesselman to this country, the committee has felt it wise not to go further in asking financial assistance of the International Education Board in arranging for visits from other European foresters, pending a decision by the board as to its policy in this direction. It is hoped that the board will eventually decide to include forestry in its activities on the same basis as agriculture, thus increasing greatly the opportunity for closer contact between foresters in the United States and other countries. The recent report of the Forestry Committee of the National Academy of Sciences may be helpful in bringing this about.

The committee has been in consultation during the year with a number of European foresters, notably Professor Hesselman, of Sweden, Professor Flury and Professor Badoux of Switzerland, and Professor Opperman of Denmark, concerning the International Forest Bibliography and the meeting of the International Union of Forest Experiment Stations to be held in Sweden in 1929. It is hoped that the committee in charge of the bibliography, of which Professor Opperman is chairman, will be able to present a final report for adoption at the meeting of the Union in 1929. Plans for the latter now contemplate a field trip of approximately two weeks to various areas of particular interest in different parts of Sweden, followed by a meeting of approximately a week at Stockholm to be devoted to technical discussions and to business matters connected with the reorganization of the Union. Professor Hesselman, as chairman of the Union, hopes for a large representation on the part of American foresters engaged in investigative work.

R. C. BRYANT

R. S. HOSMER

R. S. KELLOGG

W. N. SPARHAWK

RAPHAEL ZON

S. T. DANA, *Chairman*

December 14, 1927.

STATISTICS ON ATTENDANCE AT THE 27TH ANNUAL MEETING OF THE SOCIETY OF AMERICAN FORESTERS

SAN FRANCISCO, CALIF., DECEMBER 16 AND 17, 1927

BY M. R. BRUNDAGE,
Chairman, Attendance Committee

By far the largest attendance in the history of the Society's annual meetings took place in San Francisco on December 16 and 17, when a total of 254 foresters, lumbermen and others interested in the progress of industrial forestry registered at the assembly room in the Bellevue Hotel. About 160 gathered around the festive board for the banquet on the evening of December 16, and the participants in the two-day trip to the redwood region on December 18 and 19 exceeded all expectations by rushing in at the last minute for a total of fifty-nine round-trip reservations over the Northwestern Pacific Railroad.

An analysis of the registration slips shows that every section of the society except two (Southern Appalachian and Ohio Valley) was represented by members of the various geographical subdivisions, while non-members from six different states and two foreign countries helped to swell the total to the record-breaking figure.

Registration according to membership was as follows:

Members	73
Senior members	77
Associate members	8
Fellows	1
Non-members	95

Total registration254

The 159 delegates who registered as members represented the following sections and classes of membership:

<i>Section</i>	<i>Members</i>	<i>Senior</i>	<i>Assoc.</i>	<i>Fellow</i>	<i>Total</i>
Allegheny	2				2
California	50	40	7		97
Central Rocky Mountain	1	3			4
Intermountain	6	3			9
Minnesota				1	1
New England	2	1			3
New York			1		1
Northern Rocky Mountain	2	5			7
North Pacific	8	20			28
Southwestern	1	3			4
Washington		1			1
Wisconsin	1	1			2
Total	73	77	8	1	159

Two sections, California with 59.7 per cent and the North Pacific with 17.6 per cent, represented a little over 77 per cent of the member attendance.

A segregation according to states based on total attendance shows that seventeen states, the District of Columbia, Alaska, and two foreign countries were given as homes or business addresses on the registration slips.

<i>State, etc.</i>	<i>Members</i>	<i>Non-members</i>	<i>Total</i>
Arizona	1		1
California	98	70	168
Colorado	4		4
Connecticut	1		1
Idaho	4		4
Iowa	1		1
Maine	1		1
Minnesota	1	1	2
Montana	5		5
Nevada		2	2
New Mexico	3		3
Oregon	21	7	28
Pennsylvania	1		1
Utah	5	7	12
Washington	9	5	14
Wisconsin	1		1
Wyoming	1		1
Alaska	1		1
District of Columbia	1		1
Norway		2	2
Sumatra, D.E.I.		1	1
Total	159	95	254

The leading states in their order of representation were California with 66 per cent of the total attendance, Oregon with 11 per cent, Washington with 5½ per cent, and Utah with a little over 4½ per cent. Regionally, the great majority of those present—slightly over 95 per cent—came from the territory bounded by the Pacific coast on the west and on the east by the eastern boundary of the Rocky Mountain region; in other words, less than 5 per cent came from states east of Montana, Wyoming, Colorado and New Mexico.

It was to be expected that a meeting of foresters in the West, where lies the great bulk of National Forest land, would bring a heavy attendance of government foresters. It was rather disappointing to find that the number of foresters and other officials of private organizations who heard and took part in the program devoted especially to private forestry was far too small in proportion to the vast acreage of western timber lands, both cut-over and virgin, which are privately controlled. It is gratifying, however, to know that of the forty-nine individuals who attended as representatives of lumber companies, associations, etc., thirty-one were active members of the Society.

Forest schools were well represented because of the National Conference of these institutions at the University of California on the day preceding the Society's annual meeting.

A segregation of the attendance, according to kind of employment, follows:

EXECUTIVES AND EMPLOYEES OF PRIVATE CONCERNS

<i>Classification</i>	<i>Members</i>	<i>Non-members</i>	<i>Total</i>
Lumber Companies	16	11	27
Foresters	(8)		(8)
Logging Engineers	(4)	(1)	(5)
Logging Superintendents		(1)	(1)
Executives	(4)	(9)	(13)
Associations	6	2	8
Protective and Conservation	(3)		(3)
Lumber	(3)	(1)	(4)
Wooden Box Mfr.		(1)	(1)
Consulting Foresters	4		4
U. S. Rubber Plantations		1	1
Caterpillar Tractor		2	2
Southern Pacific Company	1		1
Doubleday Page and Company	1		1
Eddy Tree Breeding Station	2	1	3
Timberman Magazine	1	1	2
Miscellaneous*	3	5	8
<hr/>			
Total engaged in own business or employed by private concerns	34	23	57

* Includes some former foresters now retired or engaged in other lines of work, a designer of fire pumps, and a brush piling contractor.

SCHOOLS

Forest Schools	18	12	30
Deans, teaching staff, and technical assistants (18)		(3)	(21)
Students		(9)	(9)
Public Schools		2	2

NATIONAL GOVERNMENT

Forest Service	88	49	137
National Headquarters	(1)		(1)
Forest Products Laboratory	(1)		(1)
District Headquarters	(29)	(5)	(34)
Supervisors and Assistant Supervisors	(11)	(4)	(15)
Technical	(16)	(5)	(21)

	Members	Non-members	Total
Research	(21)	(1)	(22)
Rangers	(9)	(34)	(43)
National Park Service	2		2
Indian Service	3		3
Bureau of Plant Industry	3	1	4
Bureau of Entomology	2		2
Bureau of Agri. Economics		1	1
Treasury Department	1		1
Blister Rust Control		1	1
Total National Government	99	52	151
STATE FORESTRY			
State Foresters and Staff	5	3	8
COUNTY FORESTRY			
County Foresters and Staff	3	2	5
Farm Bureau Forestry Committee		1	1
Total	3	3	6
Grand Totals	159	95	254

SUMMARY IN ORDER OF NUMERICAL ATTENDANCE

(Per Cent of Total)

	Members	Non-members	Both
Forest Service	55.4	51.6	53.9
Privately Engaged	21.4	24.2	22.4
Schools	11.3	14.7	12.6
National Government other than Forest Service ..	6.9	3.2	5.5
State	3.1	3.2	3.2
County	1.9	3.1	2.4
Total	100.0	100.0	100.0

A few of the delegates represented other organizations in addition to those with which they were connected professionally. These were the American Engineering Council, represented by Dr. Zon, the Pacific Logging Congress by C. L. Mullen of the Sugar Pine Lumber Company, and the American-Scandinavian Foundation by J. L. Owe, Oslo, Norway.

One fact relative to the Forest Service representation is worthy of special comment, namely, the large number of rangers present, many of whom came from outside the state in which the meeting was held and all of whom made the trip at their own expense. When these men, who are certainly "woods foresters"

in the truest sense of the term, turn out in such numbers to attend a professional Society meeting, it appears to be high time that a new grade of membership be established by the society to keep them with us permanently. By their attendance they proved their interest, and where there is real interest there is bound to be constructive effort. This proposition has been discussed before by Society members in the JOURNAL and out of it—let's bring the subject to life again. (This digression from a purely statistical presentation of the facts and figures incident to the Twenty-seventh Annual Meeting may be out of place in this article, but the facts just mentioned give us a new lead which should be followed up without further delay, so the statistician takes the liberty of opening the debate.)

All in all, it was a good meeting. The figures show that when a forestry meeting is held out West where forests *are* forests, you get an attendance that is an attendance. After giving the concluding solo to the accompaniment of lantern slides, Zon remarked to the effect that the display of fireworks at this meeting consisted only of a few small firecrackers and a couple of cap-pistol filibusters. But give us a chance. When we have held one-quarter as many annual meetings in the Wild West as have been held away back east of the Rockies, we'll exhibit a pyrotechnical display second only to the World War. This was our first meeting so we just shook hands, did a little too much polite "yes-ing" and tried to get acquainted. Besides, the assembly room was too small for mob violence. In the usual conservative western manner we underestimated the amount of influx. Just project another annual meeting out our way—anywhere from Denver to the sea—in the near future and watch the Society of American Foresters begin to sprout some real hirsute adornment on its chest.

RESOLUTIONS PASSED AT THE ANNUAL MEETING

The Society of American Foresters, in twenty-seventh annual meeting assembled, appreciates the cordial co-operation and helpfulness of the California White and Sugar Pine Manufacturer's Association, the California Redwood Association, and the California Forest Protective Association, through their respective Secretary-Managers in numerous provisions contributing to the success of the meeting and the comfort and pleasure of those in attendance.

The meeting extends to the California Section of the Society and to the Division of Forestry of the University of California its sincere thanks for their provision for the comfort and enjoyment of attendants at the Conference of Forest Schools and the Annual Meeting of the Society of American Foresters, and desires to express its deep appreciation of such a warm western welcome.

Members of the Society of American Foresters, gathered in the twenty-seventh Annual Meeting, express their hearty thanks to the redwood lumbermen of California for their good will and cordial invitations to visit their forests and lumbering operations, and especially to the Pacific Lumber Company in making provision for the entertainment and comfort of the members and their inspection of the Company's properties.

This meeting desires to express its special appreciation to President Ray Lyman Wilbur of Leland Stanford, Jr., University for his generosity in giving of his time to address us and for the inspiration which that address brought to our consideration of the rôle of American forest resources.

Voted: To endorse the program for fellowship for the encouragement of training in forest research which has been prepared by the special committee of the Society of American Foresters at the request of the Committee on Forest Research of the National Academy of Sciences.

Voted: To record the approval of this conference of the plan for a further study of forest education as outlined by Dean Graves at the Conference of Forest Schools on December 15, and to request the President of the Society to take such steps as may be necessary in securing financial support for such study and to organize an appropriate committee for the investigation in case it can be financed.

Voted: That this Conference urge the necessity for a study of the problems of research in forest economics comparable with that recently undertaken in the biological phases of forestry by the National Academy of Sciences.

Believing it to be important to the Society that the Survey of Private Forestry, begun by a Committee of the Society and partially reported on at this meeting by Chairman Allen of the Committee, be completed at an early date, we recommend that the survey be prosecuted so that it may be brought to a conclusion and its results reported in reasonable completion at the twenty-eighth meeting of the Society.

Believing that industrial forestry must play an important part in an American forest policy and that the time is now ripe for vigorous action in furthering it, we recommend that the Society should establish a Committee on Industrial Forestry whose purpose shall be to study the problems which seem now to be retarding the development of industrial forestry with their relation to public welfare, and to co-operate with other agencies toward the solution of these problems.

In view of the gratifyingly large and representative attendance at this meeting, we believe that future meetings of the Society in the West will be abundantly justified and request the Executive Council to plan for such western meetings at intervals appropriate to the relative representation of the Society in the East and West respectively.

As an aid to more effective planning and preparation for the annual meetings of the Society, we recommend to the Executive Council that the place for the 1928 meeting be designated as early in the year as possible and that thereafter it be selected before, and announced at the annual meeting of the preceding year.

It is the consensus of the members of the Society gathered at the twenty-seventh Annual Meeting that the annual dues of the several grades of membership must be raised to enable the Society to function effectively and to perform creditably the service which it should perform for its members, the profession of forestry and the Nation. We urge all members to approve the rate of \$6.00 for members and \$8.00 for senior members proposed in the forthcoming ballot.

The members of the Society of American Foresters in attendance at the twenty-seventh Annual Meeting of the Society most strongly urge that each Section give full and earnest consideration to the revision of the constitution within the near future and that their recommendations be forwarded to the Committee not later than March 1, 1928.

Foresters assembled at the Annual Meeting of the Society in San Francisco are keenly interested in the movement of the lumber industry for the extension of the use of wood for all purposes to which it is best suited. They believe that this movement, if based on a thorough study and knowledge of the wood properties and coupled with a constructive effort on the part of the industry to make the supply of wood ample and perpetual for the needs of the country through forest practice, will accomplish much good in the development and use of our forest lands.

Recognizing the need for more representative government in the affairs of the Society of American Foresters and more general participation in Society affairs by all its sections, we recommend such revision of our constitution and by-laws as will provide for attendance at annual meetings of accredited delegates from each section and the election of members of the Executive Council either at that time or in such a way as will give representation on the Council to each section by a member elected by the section.

The twenty-seventh Annual Meeting of the Society of American Foresters urges favorable consideration by the Congress of the United States of the bill (Senate No. 1183, House No. 6091), known as McSweeney-McNary Bill, providing for an adequate program of forest research.

The twenty-seventh Annual Meeting of the Society of American Foresters urges favorable consideration by the Congress of the United States of Woodruff-McNary Bill, providing for an enlarged program of acquisition of forest land by the United States Federal Government.

The twenty-seventh Annual Meeting of the Society of American Foresters urges upon the Congress of the United States the desirability of increased appropriation for co-operative fire protection, forest extension, and distribution of planting stock under the Clark-McNary Law; for Government control of forest insects and diseases, and for planting on the National Forests.

EXECUTIVE COUNCIL FILLS VACANCIES CAUSED BY RESIGNATION OF PRESIDENT

The ballot for President and Vice-President of the Society has resulted in the unanimous choice by the Council of O. M. Butler, President, and C. S. Chapman, Vice-President.

All three amendments to the constitution were passed by large majorities. On Question 1, concerning initiation fees, the vote stood 560 to 96; on Question 2, concerning increased dues, the vote was 565 to 92; and on Question 3, concerning collection of dues, 598 to 55.

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F. S. Baker, Secretary, 305 Hilgard Hall, Berkeley, Calif.

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Southern Appalachian

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